

Advancing Clinical Pharmacy Practice

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January 2019

Volume II

Public Works submitted to Middlesex University in partial fulfilment of the
requirements for the degree of
Doctorate in Professional Studies (Health) by Public Works

Full list of Public Works in chronological order

PW	Title of Public Work	Type of work	Years covered	Additional information
1	Mehta R., Onatade R. (2008). Experience of electronic prescribing in UK hospitals: a perspective from pharmacy staff. <i>Pharmaceutical Journal</i> ; 281(7511):79-82	Publication - Professional Journal	2005 - 2008	
2	Virani N., Onatade R., Mehta R. (2008). Frequency of Drug History taking by pharmacists at King's College Hospital. <i>Pharmacy World & Science</i> ; 30 (4), p408-p409	Conference abstract	2006	
3	Onatade R., Mehta R. (2007). Tracking the PGD development process. <i>Pharmacy Management</i> ; 23 (3): 21-24	Publication - Professional Journal	2007	
4	Ling C, Mehta R, Onatade R. (2008). Assessing the proportion of patients discharged with TTA medicines issued directly from the ward. <i>Pharmacy World & Science</i> ; 30 (5), p632-p633	Conference abstract	2007	

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5	Patel S, Onatade R, Davies JG. (2008). Adherence to, and pharmacists' views of, antimicrobial switch and stop policies. Pharmacy World & Science; 30 (6), p1051-p1052	Conference abstract and undergraduate dissertation	2007	
6	Khudairi N, Onatade R, Patel N. (2008). Quality and quantity of information on medicines given to patients discharged from hospital. Pharmacy World & Science; 30 (6), p1050-p1051	Conference abstract and undergraduate dissertation	2007	
7	Onatade R., Bell C., Garcia M., Mehta R. (2008). The use of missed doses as an indicator for assessing the quality of clinical pharmacy services: a comparison of two audits. Pharmacy World & Science; 30 (6), p1049-p1050	Conference abstract	2007	
8	Brown A., Patel N., Onatade R. (2008). Pilot of a ward discharge medication labelling service. Pharmacy World & Science; 30 (6), p1061-p1062	Conference abstract	2007	

PW	Title of Public Work	Type of work	Years covered	Additional information
9	Onatade R., Jogia S., Choudhary I (2010). A study to assess the safety and time effectiveness of Pharmacy Technician triage on a gynaecology/surgical ward. Clinical Pharmacist; February 2010, Supplement 1, pS27	Conference abstract	2008	
10	Onatade R., Zuhair A. (2010). Identifying criteria for use in assessing the quality of pharmaceutical care: a modified Delphi study. Clinical Pharmacist; February 2010, Supplement 1, pS10	Conference abstract and undergraduate dissertation	2008	Oral communication

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11 a - c	<p>Quality series</p> <p>a. Onatade R. Quality Indicators are important measurement tools for pharmacy. Pharmacy in Practice; May 2008, 18(4):141-143</p> <p>b. Mehta R., Onatade R. Auditing medication history-taking can help demonstrate improved pharmacy services. Pharmacy in Practice; September 2008, 18(6):209-213</p> <p>c. Onatade R. and Mehta R. Improving the patients' discharge experience is an important pharmacy goal. Pharmacy in Practice; January 2009, 19(1):11-13</p>	Publication - Professional Journal	2008 - 2009	
12	Onatade R., Mehta R., Shallah O. (2010). The selection, modification and reliability testing of a tool to rate the clinical significance of pharmacists' clinical contributions. Clinical Pharmacist; February 2010 Supplement 1 pS3-4	Conference abstract and undergraduate dissertation	2009	Best Oral Communication award winner

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13	Considine A, Onatade R, Knighton S, Leung K (2010). A review of a pharmacist discharge prescription writing service in a large teaching hospital. Clinical Pharmacist; February 2010 Supplement 1 pS15-16	Conference abstract	2009	
14	Eaton C., Cavell G., Onatade R. (2010). Developing a definition of a reportable prescribing error. Clinical Pharmacist; February 2010 Supplement 1 pS25	Conference abstract and undergraduate dissertation	2009	
15	Onatade R., Shah R., Alidina F., Alimi-Odiora A., Goble E., Mitchell M (2011). Assessing the quality of pharmaceutical care: a feasibility study. Clinical Pharmacist; April 2011 S2 pS11	Conference Abstract	2009	Oral communication
16	Onatade, R., Chowdhury R., Bell C., Mehta R. A comparison of two methods for recording and analysing clinical pharmacy contributions (2011). Clinical Pharmacist April 2011 S2 pS13	Conference abstract and undergraduate dissertation	2009	Oral communication

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17	Talpaert M., Aroyewun M., Onatade R. (2011) Quality of vancomycin prescribing and clinical outcomes in individual patients at a London Teaching Hospital. Clinical Pharmacist; April 2011 S2 pS32	Conference abstract	2010	
18	Adaptable "scope of practice" template for hospital pharmacist prescribers. R Onatade, A Wong. The Pharmaceutical Journal; 2012; 288:720	Publication - Professional Journal	2012	
19	Talpaert M, Acosta N, Fife A, Onatade R. (2012). Improving Antimicrobial Prescribing Using Rapid Serial Audits and Feedback. Clinical Pharmacist; Jan/Feb 2013 S1 pS2-S3	Conference Abstract	2012	2012 Novartis Antimicrobial Management Award winner

PW	Title of Public Work	Type of work	Years covered	Additional information
20 a-d	<p>Redesigning the discharge medication pathway</p> <p>a) Onatade R. (2017). Using the Consolidated Framework for Implementation Research to Evaluate a New Discharge Medication Prescription Pathway. Preprints; 2017050061 (doi:10.20944/preprints201705.0061.v1)</p> <p>b) Presentations (2014 – 2017)</p> <p>c) Testimonials (2015 – 2016)</p> <p>d) Reports of drug listing implementation (2004 – 2017)</p>	a) Pre-print Publication	2005 - 2016	
21	<p>Onatade, R., Auyeung, V., Scutt, G., & Fernando, J. (2013). Potentially inappropriate prescribing in patients on admission and discharge from an older peoples' unit of an acute UK hospital. <i>Drugs & Aging</i>; 30(9), 729-737</p>	Academic Publication	2012 - 2013	
22	<p>Austin V, Onatade R. (2013). Evaluation of the Ordering and Cancelling of Inpatient Prescriptions by Pharmacists using Electronic Prescribing. Abstract presented at United Kingdom Residential Symposium November 2013.</p>	Conference Abstract	2013	

PW	Title of Public Work	Type of work	Years covered	Additional information
23	<p>a. Bell C., Callender N., Razouk R., Yerbury P., Shah R., Onatade R. (2014). Baseline Assessment of the Confidence, Knowledge and Skills of Pharmacists when providing pharmaceutical care to patients with Diabetes. Paper presented at United Kingdom Association for Clinical Pharmacy Residential Symposium November 2014.</p> <p>b. Bell C., Onatade R., Shah R., Yerbury, P. An assessment of hospital pharmacists' confidence, knowledge and skills in providing care to patients with diabetes.</p>	<p>Conference Abstract</p> <p>Unpublished manuscript</p>	2013	Oral communication
24	<p>Bourne RS., Baqir W. & Onatade R. Pharmacist independent prescribing in secondary care: opportunities and challenges. Int J Clin Pharm (2016); 38:1. https://doi.org/10.1007/s11096-015-0226-9</p>	Academic Publication	2015	

PW	Title of Public Work	Type of work	Years covered	Additional information
25	Knight E., Scaria A., Lama S., Stevenson J., & Onatade R. The extent of, and documented reasons for, discrepancies in post-hospital medicines reconciliation. Abstract presented at United Kingdom Clinical Pharmacy Association Residential Symposium November 2015.	Conference abstract and undergraduate dissertation	2015	
26	Amadu R., Adebimpe F., Onatade R. Post-hospital medicines reconciliation: The impact of providing enhanced information regarding medication changes. Paper presented at United Kingdom Clinical Pharmacy Association Residential Symposium November 2015.	Conference abstract and undergraduate dissertation	2015	Oral communication

PW	Title of Public Work	Type of work	Years covered	Additional information
27 a-b	<p>a. Onatade R, Gujral S, Phul N, Pamanathan K, Torku A, Sawieres S, Oputu T. (2015). The use of Always Events in a survey of inpatients' experiences with their medication and the clinical pharmacy service. Abstract presented at Guild of Healthcare Pharmacists and United Kingdom Clinical Pharmacy Association 11th Joint National Conference. May 2015</p> <p>b. 'Always Events' as a method of surveying and improving in-patients' experiences with their medicines and pharmacy. In Measuring and improving patients' experience of care. Report of a summit for pharmacy teams. Royal Pharmaceutical Society 2015. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/Professional%20standards%20for%20Hospital%20pharmacy/patient-experience-report.pdf?ver=2016-10-27-125729-413</p>	<p>a. Conference abstract and poster</p> <p>b. Report</p>	2015	Poster commendation

PW	Title of Public Work	Type of work	Years covered	Additional information
28	Gujral S., Onatade R., Mehta R., Hinton J., & Maharaj R. Time to administration of first dose antibiotics and associated outcomes in respiratory sepsis. Abstract presented at United Kingdom Clinical Pharmacy Association Residential Symposium November 2015.	Conference abstract	2015	Shortlisted for best poster
29	Onatade, R., Miller, G., & Sanghera, I. (2016). A quantitative comparison of ward-based clinical pharmacy activities in 7 acute UK hospitals. <i>Int J Clin Pharm</i> ; 38(6), 1407-1415.	Academic Publication	2013 - 2016	

PW	Title of Public Work	Type of work	Years covered	Additional information
31	<p>Onatade R., Quaye S. (2016). Economic value of pharmacy-led medicines reconciliation at admission to hospital: An observational, UK-based study. Eur J Hosp Pharm published first online.</p> <p>https://ejhp.bmj.com/content/early/2016/12/09/ejhp-harm-2016-001071?versioned=true</p>	Academic Publication	2014 - 2016	
32 a-c	<p>Improving the pharmaceutical care of patients with severe mental illness</p> <p>a. Onatade R., Oduniyi O. Improving the pharmaceutical care of patients on psychotropic medication admitted to an acute hospital – the impact of a proactive ‘inreach’ specialist psychiatric pharmacist service. Presented at United Kingdom Clinical Pharmacy Association Residential Symposium November 2016.</p> <p>b. Conference presentation and professional coverage</p> <p>c. Internal reports and associated documents</p>	<p>a. Conference abstract and Award Winner</p>	2015 - 2016	2016 UKCPA Pfizer Patient Safety Award winner

PW	Title of Public Work	Type of work	Years covered	Additional information
33	Mehta R., Onatade R. (2016). On behalf of the IMPACCTS group. Content validity of a tool for rating the significance of pharmacists' clinical contributions. Abstract presented at November 2016	Conference abstract and undergraduate dissertation	2016	Shortlisted for best poster
34	Onatade, R., Appiah, S., Stephens, M., & Garelick, H. (2017). Evidence for the outcomes and impact of clinical pharmacy: context of UK hospital pharmacy practice. Eur J Hosp Pharm, ejhpharm-2017.	Academic Publication	2017	
35	Onatade R., Chou A., Johnston A., Smith F., Stephens M. (2017). Costs and consequences analysis of a clinical pharmacy service to a surgical ward. Abstract presented at United Kingdom Clinical Pharmacy Association Residential Symposium November 2017.	Conference abstract and postgraduate dissertation	2017	

PW1

Experience of electronic prescribing in UK hospitals: a
perspective from pharmacy staff

Reena Mehta and Raliat Onatade

Experience of electronic prescribing in UK hospitals: a perspective from pharmacy staff

By Reena Mehta and Paliat Onatade

Abstract

Aim

To describe the experiences of pharmacy staff with inpatient electronic prescribing (EP) systems.

Design

Telephone interview via a semi-structured questionnaire.

Subjects and settings

Pharmacy departments in UK NHS hospitals.

Outcome measures

System features, changes to pharmacy services before and after introduction of EP, perceived advantages and disadvantages for staff and working practices and desired developments.

Results

Three different systems were in use in the seven hospitals contacted. Electronic prescribing was used in most inpatient wards, excluding high dependency wards. All systems had clinical decision support, usually maintained by pharmacy. All interviewees said there had been changes to pharmacy services after implementation, such as the way medicines were ordered, methods of stock control and clinical roles and responsibilities. Overall, electronic prescribing was seen as a benefit. Many tasks were identified as easier and more advantages were seen than disadvantages. Desired future developments mentioned were to use full clinical decision support, to add a formulary and to make documentation of allergy status mandatory. All interviewees felt that adequate training was important.

Conclusion

EP affects how pharmacy services are delivered. It needs considerable change and a multidisciplinary approach. This study highlights issues that need to be considered for successful implementation of EP.

By 2005, all acute hospitals in the UK were expected to have implemented electronic prescribing (EP) as part of the Government initiative to improve the treatment and care of NHS patients through application of information technology.¹ This implementation deadline has passed, but it appears that few NHS trusts have moved beyond the pilot stage.²

Currently, prescribing in most NHS hospitals involves the use of paper charts for each patient, on which doctors handwrite and sign medication orders. Nurses use the same charts to record administration.

As a result, the widespread introduction of EP should be expected to change several aspects of clinical care in the NHS. It is, therefore, important that all professionals are aware of the possible impact of EP on the way they work.

Adoption of new methods for carrying out established tasks means that doctors, nurses and pharmacists, in particular, will need to change their routines and established relationships fundamentally.³ Implementation of these systems requires considerable organisational change, which healthcare staff can find threatening.

Electronic prescribing and the pharmacy service EP in hospitals is expected to have a positive influence on safety, effectiveness, efficiency and the cost of providing clinical care.³ For pharmacy departments involved in implementing EP in their hospitals, it is important to understand the advantages and disadvantages, and how the system will alter ways of working.

Although traditional roles will change, there may be new responsibilities as a result of EP. In their 2003 survey of sites which piloted or implemented electronic prescribing and medication administration, Brennan and Spours found that pharmacists' positions as part of multidisciplinary EP working groups were crucial in ensuring the robustness of the new prescribing process.⁴ Other roles include ensuring the system does not impact too greatly on the pharmacy workload and being responsible for the safe and effective use of the system within the remit of the pharmacy department.²

Published data on how EP has affected pharmacy services in the UK is lacking. In a comprehensive review of their experiences in Sunderland NHS Foundation Trust, Foot and Taylor argue that the area that had to change its working practices most was pharmacy. In their article, they discuss the impact of EP on their pharmacy, especially the benefits of the

system and the use of clinical decision support (CDS).²

Published information on implementation and evaluation of EP (often used interchangeably with the term computerised physician order entry [CPOE]) from the US is plentiful.⁵⁻¹¹ However, much of it is not applicable to the UK, especially within hospital pharmacy, where models of pharmacy practice and service delivery are often quite different.⁴ Barber *et al* (2007) evaluated the pilot implementation of an electronic prescribing and administration system on a surgical ward in a London teaching hospital.¹² They also included views from pharmacists. Issues discussed ranged widely, including system functions, staff perspectives and organisational context. However, since the system was based on one ward, relevance to other sites and specialties cannot be assumed. This study was carried out to:

- Be able to describe how EP has changed the way pharmacy staff in UK hospitals work
- Establish the perceived advantages and disadvantages of EP and EP systems for a hospital or organisation
- Establish the benefits to pharmacy departments of changing from a manual system to an electronic system of prescribing

The findings will be of use to staff looking for practical information on pharmacy and EP in UK settings.

Method

The research method was interview-based via a semi-structured questionnaire. The interviews took place between March and April 2005. The local ethics committee confirmed that ethics approval was not required.

Questionnaire design The themes and questions for investigation were chosen by discussion with colleagues and by searching for articles on Pharmline, Medline (1996 to date) and Embase (1996 to date). Keywords used included electronic prescribing, computerised physician/prescriber order entry (CPOE), physician/prescriber order entry, computerised order entry, health informatics, electronic medication administration record (EMAR) and computerised prescribing combined with clinical pharmacy, hospital pharmacy and pharmacist. Common themes were identified from the literature search and used to develop areas for investigation. We only studied electronic prescribing in inpatients. The questionnaire was piloted by telephone to one pharmacist at one hospital, which was

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piloting EP at the time. Modifications to the questionnaire were then made to clarify ambiguous questions to obtain the final version for the proper interviews.

Identification of hospitals Hospitals that had implemented EP were identified from the literature search and anecdotally. Only those using EP for all or most of their inpatient prescribing were included.

Interviews Each pharmacy department was telephoned and asked to identify the appropriate person to contact. This person was then sent both a letter and an e-mail explaining the aims of the study and inviting them to participate. Some respondents asked to see the questions beforehand. We recognised that this would help to ensure we were talking to the most appropriate person, and that the information we needed would be at hand during the interview. A list of questions was therefore sent separately to all interviewees. They were asked to confirm in writing their willingness to participate. Any contacts who had not replied within a week were followed up by telephone.

One member of staff from each hospital was interviewed by telephone. The length of interview varied between 45 and 90 minutes. Each telephone interview was recorded with permission from the interviewee and notes were taken contemporaneously.

Data analysis Each recording was reviewed and missing information from interview notes added. All information was reported anonymously, with no identification of hospitals. Quantitative and qualitative data were analysed according to the themes in the questionnaire. MS Excel 2000 was used to arrange the data. Pilot data were not included in the final analysis.

Results

Seven UK hospitals in different trusts, were identified. Two were teaching hospitals. All agreed to be involved. All the staff interviewed were pharmacists who worked as part of the clinical service or were involved in the support or design of the EP system in their hospital.

Three hospitals used the Meditech system, two used the TDS 7000 system and two used the JAC system. The number of years that EP was used ranged from three to 16 years. All systems were commercially available.

Implementation of electronic prescribing EP was used mainly for inpatients. Inpatient areas where it was commonly not used were intensive care, the high dependency unit, accident and emergency, and paediatrics.

Three hospitals stated that EP was piloted before roll-out to other areas. In each case, piloting took place on one ward. The pilot wards used varied from surgical wards, where there was a high turnover of both uncomplicated and complex cases with different clinical conditions, to orthopaedic wards, where

Table 1: Features of clinical decision support available to the prescriber

Clinical decision support features	Number of hospitals that used this feature
Default drug doses and administration details	6
Alert for duplication of entry	3
Allergy alerts	2
Drug-drug interactions checking	2
Alert for therapeutic duplication	1
Checks against laboratory results	1

the turnover was low. This is important as the software can be assessed for safety and stability at different levels.

Four hospitals mentioned that if they were to repeat the implementation process they would give more staff training beforehand. In only one hospital was a change made to pharmacy practice before the roll-out of EP. This involved making the technicians' roles more ward-based.

Prescribing systems and processes

Five hospitals electronically recorded medicines administration in real time and the other two hospitals recorded the administration on paper and then added the information to the electronic system retrospectively. Hospitals that recorded the administration on paper first did not find this a problem, but accepted that it was not ideal.

In all hospitals doctors entered the prescription orders on to the system. One hospital also had pharmacists regularly entering prescribers' orders. This hospital also had plans to give pharmacists primary responsibility for entering medicines orders in the near future. All except one hospital allowed full access to pharmacists to alter the drug regimens. The hospital that gave pharmacists no prescribing access were in the process of reviewing this.

Allergy documentation before a doctor could prescribe was mandatory at only one hospital. Three hospital systems had the option to select the allergy from a list, two hospitals could free-text the allergy and two hospitals had both these options. Some hospitals, although they had the same EP system, recorded allergies in different ways.

Only one hospital prescribed all medicines on the electronic system. Six hospitals still required the use of paper charts for prescribing drugs, such as insulin sliding scales, intravenous fluids, blood products, anticoagulants and medicines administered by continuous infusion. In four out of six hospitals it was possible to enter the drug and time of administration on the system, but still use paper charts for documenting doses prescribed and administered. In four hospitals, total parenteral nutrition (TPN) and parenteral chemotherapy were also prescribed on paper.

Two hospitals used a system with the option to restrict the choice of drugs that could be selected by the prescriber. The availability of products for prescribing was managed by

pharmacy and introduced a level of formulary control. This was helped by the EP system being linked to the pharmacy stock system. The type of clinical decision support (CDS) available to prescribers varied (see Table 1).

In six of the hospitals the CDS was maintained by pharmacy. Two hospitals had an advanced prescribing system, which integrated treatment protocols and order sets.

Three hospitals used the EP system for pharmacists to communicate with other staff and document their contributions to the care of the patient. Two of these hospitals also used their systems to monitor clinical pharmacy activity by reviewing recorded information.

The pharmacy service Since the implementation of EP, five sites had changed pharmacy service delivery. For example, more prescription screening was done from pharmacy, technicians identified the need for stock and dispensed items at ward level, and pharmacists had more clinical input on the wards, by attending more ward rounds.

Five hospitals stated that the time pharmacists spent on the ward had not changed. At three of the hospitals pharmacy staff were able to carry out more clinical activities without increasing the amount of time spent at ward level. In one of the two hospitals where time spent had changed, staff spent less time on wards and in the other the interviewee said that the change had varied with individuals.

Pharmacists at four hospitals visited all the patients daily whether they had a wireless or a fixed device system. At one hospital the charts were printed off and pharmacists carried these as they reviewed patients at the bedside. At the other three hospitals pharmacists only saw patients if queries about their prescriptions had been previously identified. Hospitals where pharmacists did not see their patients daily did not see this as a problem, as it allowed pharmacists to extend their clinical role by, for example, attending ward rounds. If pharmacies were short staffed, medicines prescribed could be reviewed from computer screens based in the dispensary. However, it was highlighted that remote screening of prescriptions reduced the contact time with patients, denying them the opportunity to ask questions or to be given expert advice on their medicines.

None of the EP systems needed pharmacy staff to endorse the drugs for supply. In four of the systems the computer was programmed to identify stock drugs. All the systems enabled pharmacy staff to indicate to the nurse whether the patient had their own medicines (patients' own drugs — PODs) with them.

In six hospitals, orders for non-stock medicines were sent direct to the pharmacy electronically, in some cases at the point of prescribing. In four hospitals, a label was generated automatically, which would be used for dispensing in pharmacy. One hospital mentioned that technicians' roles in the dispensary may become "devalued" if they are only dispensing against electronically generated labels.

Panel 1: Perceived advantages and disadvantages of electronic prescribing as described by respondents

Advantages

Legible and complete prescriptions

Ability to identify prescriber easily

Easy to see and amend prescriptions, eg in the dispensary, another ward, another hospital another ward, another hospital within the trust

Formulary control

CDS helps by educating doctors and makes it easier for them to prescribe

Easy access to more information, eg drugs on previous admissions, pharmacist notes from different admissions.

Safer prescribing if CDS in use

Patient's drug chart(s) never leaves the ward

Can print list of medicines due for administration at a certain time rather than having to look at every prescription

No transcription errors on TTAs/new charts

Doctors can see when a drug was given, eg the time in case patient has a reaction

No lag time as TTAs automatically sent to pharmacy

Easier to record administration of medicines

System linked to pharmacy stock control

Disadvantages

Doctors become less knowledgeable of drug doses if default doses in place

Some tasks take longer, such as editing orders, tracking additional paper charts

Expectation from doctors that pharmacy will amend orders if prescribed incorrectly

Patients do not have access to their drug chart, so do not know what they are taking making it harder to counsel on discharge

As all drugs are in a list to choose from, easy to pick wrong drug when prescribing

As patients records can be seen anywhere, doctors may make prescribing decisions without seeing medical notes

Doctors do not always communicate with nurses if they make changes to medication other than when they are on the ward

Need to get used to system, so drug administration takes longer initially — training

Six hospitals found that EP had an impact on the dispensary. All found that prescriptions for discharge medication (to take away — TTAs) and inpatient items had quicker turn-around times as they were sent to the pharmacy electronically. Three hospitals indicated that the pharmacy workload had increased. The number of staff had generally not changed in hospitals after implementation of EP. In most cases only one extra staff member (pharmacist, technician or system manager) was needed to help implement and support the system.

Perceived advantages and disadvantages Interviewees thought there were few initial problems encountered when implementing the EP systems. The general issue that all hospitals mentioned was that adequate training and support is needed on implementation. Other perceived advantages and disadvantages are listed in Panel 1.

Three hospitals had audited some aspects of their system. The areas that were audited were the clinical decision support, completion of drug administration records by nurses, improvements in doctors writing prescriptions accurately and medication errors in prescribing and administration. All interviewees wanted to make some changes to their system

to benefit pharmacy. For example: adding a formulary to the system; integrating hospital guidelines into prescribing; prescribing by pictures, especially for inhalers and insulins to help with identification during drug history taking; linking the system to the pharmacy stock system.

Discussion

Implementation EP was generally not implemented in critical care areas in the hospitals surveyed. Foot and Taylor report that in their trust this was mainly due to the difficulties in setting up a programme to enable continuous infusions to be prescribed on their system.² The training needed for successful implementation of an electronic prescribing system is something that should not be underestimated, and this is highlighted by the fact that many interviewees stated that they would have given more training before implementation. Published literature indicates that large hospitals with high staff turnover and frequent use of agency staff and locums will have significant training issues to deal with.⁴

Prescribing systems and processes

The recording of drug administration in real time was seen to be ideal. Brennan and

Spours recommend that hospitals should consider having wireless portable technology to ensure that lists of drugs due are available in real time and are not out of date.³

This study found that, in general, order entry had not been delegated to pharmacists although most hospitals allowed pharmacists full access to alter the drug regimens. In the US, CPOE is recognised as a new skill and will be associated with a significant learning curve, which may give rise to new errors. As a result, there may be a view that pharmacists should be responsible for entering orders for physicians.¹³ However, not everyone believes that this is a progressive development.⁶ In the UK, Winchester Hospital believes that pharmacists are best placed to enter prescriptions and have incorporated clinical pharmacists on consultant ward rounds, where they are in a position to make drug changes, initiate therapy and transcribe TTAs.¹⁴

There was no consensus about documenting allergy status. Experience shows that ensuring documentation of allergy status is an area that is often difficult in manual systems.¹⁵ Electronic systems can ensure this information is always present on the prescription at the point of drug prescribing and administration.^{15–17} Where allergy completion is mandatory and CDS exists, the allergy alert feature will alert the prescriber if the patient is allergic to any of the drugs prescribed, allowing them to reconsider their choice.¹⁸ However, organisations should also remember that using CDS in this way may not be reliable if free text is allowed, because drug entries may be misspelt or not recognised by the system.

The clinical decision support provided by systems varied between hospitals. CDS systems have been shown to improve prescribing safety compared to paper prescribing.^{18,19} However achieving safety without overwhelming doctors with clinical alerts is essential for this system to be accepted.^{11,20}

Electronic prescribing was used to facilitate formulary management in two hospitals. It is clear that if products that appear in drug dictionaries are specifically selected, the list of drugs available for prescribing can be limited to those that the hospital allows. Different areas and non-medical prescribers could be given access to a limited list of drugs. Literature from the UK and the US shows that it is possible to set up systems such that authorisation to prescribe restricted drugs must be sought before proceeding, or more information can be requested by the programme before the restriction is lifted.^{11,21}

Brennan and Spours reported that integration of the pharmacy's stock control system, while desirable, may not be essential during the early phases of implementation.⁴ Interviewees from the hospitals which linked EP to the pharmacy stock system stated that they used this to flag up drugs that were not in stock and where needed, restricted the prescribing of such drugs.²

Pharmacists were usually responsible for creating the drug databases from which the doctors prescribe and for maintaining them

thereafter. The development and maintenance of the databases and their application to integrated care pathways and local guidelines will be a new and time-consuming role for clinical pharmacists in the future.²² Unfortunately, one of the barriers to this is the availability of appropriate software for the UK market.⁴

Recalling pharmacists' communications and contributions is not easily done with paper records. EP was found to facilitate this through the use of electronic audit trails. Audit trails are portrayed in the literature as a significant benefit of EP as they ensure that everyone involved in the medicines process can be identified, from the doctor who prescribed, pharmacist who clinically checked the prescription right up to the nurse who administered it.^{2,16,23}

The pharmacy service It is widely believed that clinical pharmacists in hospitals that have EP spend more of their time on clinical duties and less time on stock control and record keeping, compared to other UK hospitals.¹⁷ Franklin *et al's* report on the introduction of EP on one ward supports this.²⁴ Although this has not been fully borne out by our study, the facility to view prescriptions from any terminal has enabled pharmacists to target patients who may need more pharmacy input, without having to visit the ward first. This may save time and can be especially useful when there are staff shortages. However, there may be an issue of reduced patient contact. By not reviewing drugs still prescribed on paper charts or not checking patients' vital signs daily there is the potential for important clinical information to be overlooked. In one of the hospitals surveyed, all patient observations were recorded on the electronic patient record, so

this was less of an issue. However, the value of pharmacists speaking to patients should not be ignored. For example, a patient may have questions to ask, information about prescribed or unprescribed medication or adherence issues.

Endorsing drug charts for safety and supply is a key role for pharmacy staff. In some cases, the systems could differentiate stock from non-stock items, and an order electronically generated. However, Foot and Taylor encountered problems with their system not recognising that stock medicines were not sent with the patient when they were transferred to another ward. This could result in patients missing doses of important medicines.²

Electronic transmission of orders may have unexpected consequences. Dispensing may be quicker, especially if a label is generated automatically. However, pharmacists may have to spend more time on the ward when carrying out the clinical screen because, during that process, they ensure that the wording on the label that will be generated once the prescription is confirmed is accurate and unambiguous.

Advantages and disadvantages Most of the advantages described by respondents were similar to those mentioned in published work in the UK^{16,25,26} and in the US.¹¹ All interviewees cited legible prescriptions as an advantage. A number of studies have indicated that the quality of handwritten inpatient prescriptions in UK hospitals is poor. One study found that 4–10 per cent of UK hospital prescriptions were illegible or ambiguous and 11–26 per cent had incorrectly written doses.²⁷ Many of the reported disadvantages of EP seem to be associated with the way people work as opposed to the system.

Limitations Ours was a small survey, because the method only identified hospitals that had published information, or were high-profile EP users. NHS hospitals with a low profile will not have been identified. Bias may also have been introduced by not including hospitals that had tried EP, but had been unsuccessful at implementing it, and by including the views of only one person from each hospital. However, since many of the themes were common across all hospitals, it is unlikely that these limitations have affected the relevance of the findings for other trusts.

Conclusion In the opinion of the interviewees, EP has had a positive impact on their pharmacies. The system and processes present challenges and opportunities to staff. The way pharmacists carry out their tasks of reviewing medication has required them to adapt to the system and roles may need to be redefined to ensure optimal medicines management. EP can also result in re-evaluation of technician roles to a more patient-oriented focus.

To make the change from a manual system to EP, hospitals should share good practice to develop safe systems. For EP to be successful, a multidisciplinary approach needs to be taken and pharmacists should be part of that structure. It is important to address possible barriers such as training for hospital staff to accept the system and maximise benefit.

ACKNOWLEDGEMENTS Thanks to Tony Dilks, previously electronic prescribing pharmacist and Gillian Cavell, deputy director of pharmacy, medication safety, King's College Hospital, for their valuable input. We are also grateful to the hospitals that participated. No sponsorship was required for this study.

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PW2

Frequency of drug history taking by pharmacists at
King's College Hospital

N. Virani, R. Onatade, R. Mehta

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34 Identifying patients in the acute hospital setting who will benefit most from pharmaceutical input

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Introduction

The pharmaceutical care of any patient is dependent on an effective needs assessment [1, 2]. Although this has received attention over the past few years [3, 4], there are little published data. Pharmacy staff are a scarce resource, and there are insufficient numbers to guarantee identifying and managing every inpatients' medicines-related issues. Indeed, not every patient needs this high level of input, particularly people who are otherwise normally healthy. The National Service Framework (NSF) for the Older Person identifies medicines-related features which are more likely to be associated with problems in older people. These are taking 4 or more medicines, therapy with specific drugs (e.g. warfarin, diuretics, digoxin) and recent discharge from hospital. It also recommends that all elderly patients taking 4 or more drugs should have a medicines review every 6 months. Whilst this standard has, in the main, been an issue in primary care, it is still relevant for secondary care.

Objectives

The aim of this project was to investigate whether applying the NSF standards to inpatient admissions of all ages, not just over 65's, in an acute setting was possible, practical or appropriate.

Method

The study took place for a 4-week period on a Medical Admissions Unit in a District General Hospital. Patients admitted to the unit during the working week (Monday–Friday), were assessed by against the standards outlined in the NSF. Normal pharmaceutical care and support with medicines management issues was provided throughout their hospital stay.

During their hospital stay an assessment was also made about whether applying the NSF standards per se was appropriate in the acute setting of an Admissions Unit. Patients were assessed to see whether they potentially needed help because they were on a drug which required monitoring (like digoxin, warfarin, lithium), or whether it was necessary to counsel them about their therapy (like inhalers, steroids). These drugs were identified and listed on the proforma which Assistant Technical Officers used to collect all the data in this study.

Ethical approval was not required for this study.

Results

During the 4-week period 373 patients in total were assessed on the Admissions Unit. 110 (30%) of the patients had been in hospital in the previous 3 months, and of these 36 (10%) were on less than 4 drugs and the remainder on 4 or more drugs. 263 (70%) of the group had not

been in hospital during the previous 3 months, 108 (29%) of them were on less than 4 drugs and the remainder on 4 or more drugs.

Overall, 42% of the patients did not need any input with regard to counselling or monitoring of therapy; 8% took drugs which needed monitoring; 38% were on drugs where counselling was important and 12% would have benefited from pharmacy input for both monitoring and counselling.

For patients on less than 4 medicines, 67% did not need help with regard or monitoring of therapy; 8% took drugs that monitoring; 23% were on drugs where counselling was important and 2% would have benefited from help with both.

For patients on 4 or more medicines, 27% did not need any input with regard to counselling or monitoring of therapy; 9% needed help with regard to monitoring; 47% with counselling and 17% would have benefited from help with both.

In the recent hospital admission group, 44 patients out of 110 (40%) were assessed as requiring no input with respect to monitoring or counselling, compared to 115 out 263 (44%) in the other group. Therefore, a recent hospital admission does not appear to be a good predictor for identifying patients who require pharmacy input, although this has not been statistically verified.

Discussion (including conclusion)

The results show that, as expected, patients who take 4 or more regular medicines have a greater need for counselling or monitoring. Concentrating on just these patients means that a third of patients who would benefit from an intervention relating to monitoring or counselling are missed. Conversely there is the potential to waste resources as 27% patients on 4 or more medicines did not need this input. Sole use of the NSF criteria is not an appropriate indicator in identifying patients needing input with respect to monitoring or counselling in acute admissions.

It is imperative that we are able to identify those patients who would benefit from our professional input. Targeting our resource will not only helps us manage the service requirements, but also improves patient care and manages risk. It is inappropriate to concentrate merely on the number of drugs taken by a patient.

Increasing direct clinical contact with those patients who need it and/or those who will benefit most should, in theory, lead to improved patient outcomes. Using a tool which incorporating the all the elements included in the proforma used here for data collection would allow non-pharmacy staff to be involved the process. Role development, skill mix and service re-engineering has already been used extensively to increase the pharmacy team's involvement in direct patient care, but work is needed to further target pharmacy resources.

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35 Frequency of drug history taking by pharmacists at King's College Hospital

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Introduction

An incomplete or inaccurate medication history can lead to inappropriate drug therapy during hospitalisation and may affect patient

safety [1]. Pharmacists are known to be more thorough in taking medication histories compared to other healthcare professionals [1–3]. While pharmacists have been found to take longer to take a drug history compared to doctors, they have also been found to be more accurate [1, 3]. The Department of Health recommends that clinical pharmacy activities should be extended to pharmacists taking patients' medication histories [4].

The Pharmacy Department at King's has recently set clinical service standards, which serve as quality indicators. One of these standards requires a drug history to be recorded by pharmacy staff within two working days of an in-patient's admission to the hospital. This audit was carried out to establish a baseline, in order to indicate how the department is performing and to aid in setting targets and removing barriers to practice. At the time of the audit, there was no dedicated area on the drug chart to record a medication history.

Objectives

To assess:

- In what proportion of patients pharmacists have obtained medication histories within 2 working days after admission
- If documented medication histories signed and dated
- How soon after admission drug histories are taken
- Reasons for non-documentation of drug histories

Method

The audit was in two parts. The first part, to assess the percentage of drug histories which were obtained, took place over 1 week. Excluded units were—rehabilitation (as patients are all transfers from other wards, not acute admissions), intensive care (as drug histories are difficult to obtain), neonatal and ante- and post-natal areas. Patients admitted to all other ward areas (37 wards/808 beds) no less than 48 h prior to the data collection day were included, unless the drug chart was not available or if the patient had already been discharged earlier that day. If there were no admissions to a particular ward during its allocated data collection period, every attempt was made to re-visit it on subsequent days.

34/37 wards (715 beds) had eligible patients. Each drug chart was checked to see if a pharmacist-obtained drug history was documented. If not, the ward pharmacist was contacted to establish whether one had been documented elsewhere, or to explain why he/she had decided not to take a history.

The second arm took place on a single day in the following week. The private patients' wing was additionally excluded. Patients admitted at any time within the 72 h prior to data collection were reviewed, and a record made of how soon after their admission to the ward a drug history was recorded. For undated histories, the time elapsed between date of admission and date of data collection was calculated.

Results

Part 1: Sixty patients were identified. 33/60 (55%) had their drug histories recorded. Out of these, 85% were signed, 79% were dated and 33% had a contact number included. Reasons for non-documentation of drug histories were categorised as follows:

- Patient on few/no drugs so no drug history required
- Pharmacist not aware of correct admission date
- Different pharmacist from normal covering ward
- Not enough time to document a full drug history
- Pharmacist did not feel patient required a drug history
- Other

On review, the Clinical Pharmacy Services team concluded that the only justifiable reasons were cases of communication barriers or 'frequent flyers'—three patients in total.

Part 2: 108 patients were identified. 57 (53%) had a drug history recorded. Out of these, 61% (35/57) were dated (Table 1).

Table 1 How soon after admission on the ward was a drug history taken

	Number taken, excluding undated histories (n = 57)	Number taken, including undated histories (n = 57)
Taken within 12 h	13 (23%)	13 (23%)
Taken within 12–24 h	18 (31%)	21 (37%)
Taken within 24–48 h	2 (4%)	11 (19%)
Taken within 48–72 h	2 (4%)	12 (21%)
Not dated	22 (38%)	NA

Discussion

The aim of this audit was to establish a baseline in order to determine a target for the quality standard. Similar results were obtained in the first and second arms. Therefore the aim was achieved. 79% of histories were taken within 48 h, indicating that after this time, a drug history is much less likely to be done at all. The current position where only 55% of drug histories are taken lends itself to improvement. Drug charts at King's now have a specific area for recording medication histories, which should improve documentation. In view of the evidence showing the value of drug history taking, senior clinical services staff feel that it should be prioritised. It has therefore been agreed that for all eligible patients, a target of 75% of drug histories should be obtained within 2 working days after admission. The universal standard for signing and dating all information in patient notes is 100%. These standards will be reaudited as part of the clinical services quality programme.

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36 Use of abciximab and bivalirudin during percutaneous coronary intervention

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Introduction

Percutaneous coronary intervention (PCI) is a method of mechanically opening occluded or stenosed coronary arteries. Oral antiplatelet and intravenous (IV) antithrombotic agents are considered essential adjunct treatment in patients undergoing PCI to reduce the risk of thrombus formation. At King's College Hospital (KCH), the recommended oral antiplatelet therapy for PCI is aspirin 300 mg with a loading dose of clopidogrel 600 mg, unless previously loaded [1]. In addition, abciximab, an intravenous antiplatelet agent, is indicated for the prevention of ischaemic complications in high-risk patients undergoing PCI. The National Institute of Clinical Excellence (NICE)

PW3

Tracking the Patient Group Directions
Development Process

Raliat Onatade and Reena Mehta

SECONDARY CARE COALFACE

Tracking the Patient Group Directions Development Process

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Summary

- PGDs take much longer than expected to be developed and sometimes are never completed. This is a waste of organisational resources
- Tracking PGD development timescales can be straightforward and allows an organisation to determine at which stage the development process is failing
- Competing priorities, poor communication and lack of expertise are factors affecting the timely completion of PGDs
- PGDs which are closely linked to organisational targets and priorities will be developed quickest and are unlikely to be abandoned uncompleted

Introduction

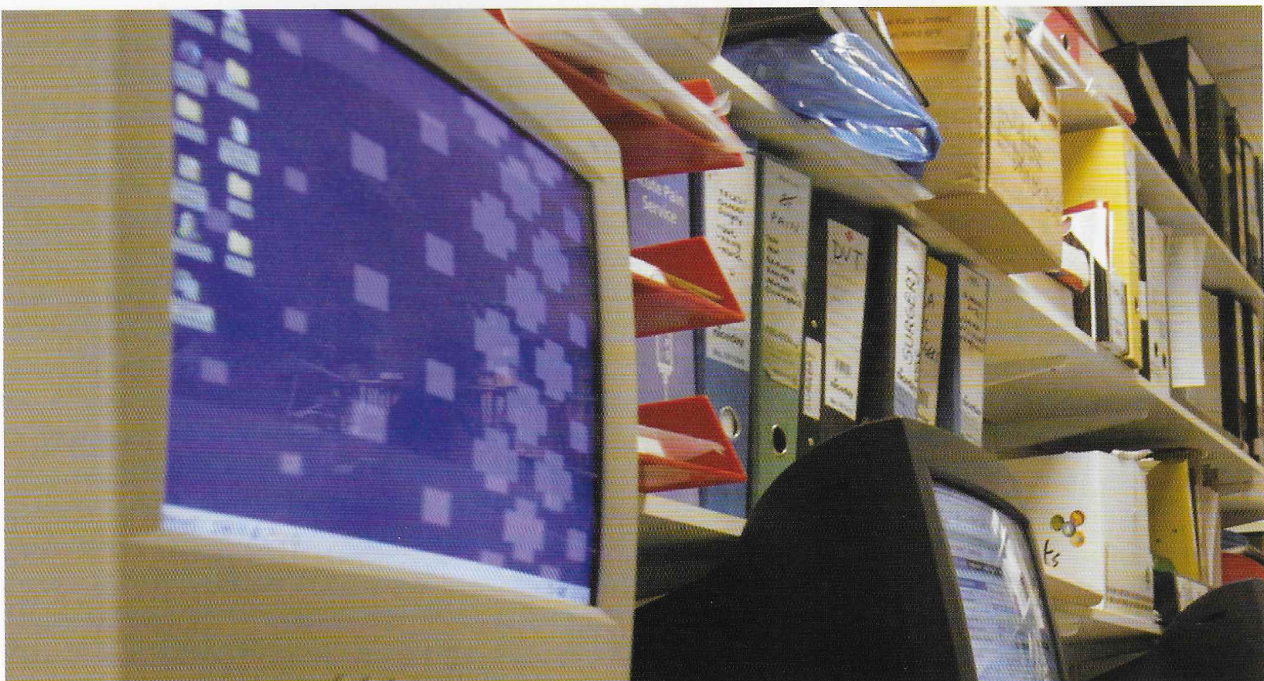
This short paper details a desk tracking exercise that we undertook to determine how long PGDs were taking to be completed at our organisation. We describe the background to the process in our Trust, the reasons why such an exercise was necessary, our findings, and our plan of actions as a result of our finding. Other Trusts may find this information helpful if they are experiencing similar issues with PGDs.

Background and Method

King's College Hospital NHS Foundation Trust is a 950-bedded teaching hospital in South East London. The Trust provides both local and specialist tertiary services. The Pharmacy Department lead on Non Medical Prescribing and takes responsibility for co-ordinating PGD

development and approval. A spreadsheet for tracking Patient Group Directions (PGD) timelines was set up in January 2006 and lead authors of PGDs that had been proposed or were in development before this time were contacted for information on progress and whether they still wished to continue with the PGD process. All information regarding PGDs stages of development is now entered prospectively onto the spreadsheet.

With pressures such as waiting times, targets and changes to junior doctors' hours, we have seen the demand for PGDs increase, despite the advent of supplementary and independent prescribing. In November 2006, we performed an exercise to determine where the delays were in the process. The need for this was driven by the realisation that requests for pharmacy input into





developing PGDs were increasing, and that despite streamlining the process, there was still some concern at our Medicines Management Group regarding the length of time taken for PGDs to be completed.

The PGD development process is as follows

- The lead member of staff completes a PGD proposal form (available at www.pharman.co.uk) and submits it to the Multi-disciplinary Non Medical Prescribing Group (NMPG) for approval to develop a PGD. The lead clinician and responsible manager in the area where the PGD is to be used must sign that they are aware of the proposal and they agree that its use is appropriate.
- Once the proposal is approved, the PGD can be written, using the standard template (available at www.pharman.co.uk). Authors must include a pharmacist and a doctor.
- Once written, the PGD is given to another professional member of staff (usually a pharmacist but could also be doctor or nurse) for peer review against a standard set of criteria. The peer reviewer may ask for changes to be made.
- The peer reviewed PGD is submitted to the NMPG for final approval. NMPG do not expect to recommend significant changes, although some minor amendments may be required. Resubmission at an NMPG meeting is not required, as the lead pharmacist will ensure all necessary changes are made.
- All authors and sign an original copy of the final amended PGD, as well as the required authorisation leads (Director of Pharmacy, Medical Director, Director of Nursing, etc).

- Once all signatures have been collected, the PGD is returned to the Pharmacy Department, signed by the NMPG Chair and a copy sent to the originating department. At this point the PGD can enter clinical practice.

Results

Fifty-four PGDs have now been approved by Non Medical Prescribing Group (NMPG), up from 29 in November 2005. Eight PGDs are in development, including 4 since 2003. All PGD proposals and final versions submitted are considered at the next available NMPG meeting. This will be within 4 to 6 weeks of submission. Often, NMPG have to prompt individuals to submit their PGDs to the next meeting.

Overall: In 2005 and 2006, the time taken for PGDs to be completed (from proposal approval to the PGD entering clinical use) ranged from 6 to 16 months. This can be broken down into stages as follows.

Stage One. Time taken for PGDs to be written: In 2006, PGDs were taking an average of 6.3 months (range 4 to 8 months) to be written, once NMPG had approved the proposal. This includes peer review, which is completed within 2 weeks. The stated deadline for Stage One is 8 weeks.

Stage Two. Time taken for PGDs to be amended: In 2006, PGDs were taking an average of 6.3 months (range 3 to 10 months), to be amended, once comments had been received from NMPG.

Stage Three. Time taken for final sign off from NMPG: In 2005 and 2006, PGDs were taking an average of 1 month for authorisation signatures to be obtained. However, this figure does not

"54 PGDs have now been approved by NMPG, up from 29 in November 2005"



include 8 out of the 27 PGDs which have been approved within this period and where the authors still do not have final signatures (range 4 to 12 months since final approval). The stated deadline for this stage is 2 weeks.

Audit and reapproval. All PGDs are due for audit and review 2 years after first approval. The tracking sheet allows us to inform lead authors well beforehand that their PGDs will need to be reviewed and submitted for reapproval. A three-month grace period post-expiry is allowed, after which the PGD is no longer valid.

Discussion

The greatest delays occur at stages one and two. This may be due to competing priorities, poor communication and lack of expertise in PGD writing. Pharmacists are always listed as co-authors on PGDs, and spend a lot of time editing and advising on them, however, under normal circumstances they will not be the primary instigators or drivers of the process. The PGD policy and information given to authors states clearly that they should write the PGDs within 8 weeks of the proposal being approved. When primary authors leave or go on breaks, communication seems to break down, or

information is not handed over and therefore the PGD process lapses.

PGDs are regarded as complex, non-intuitive documents, and writing them is a skill which needs to be acquired. Staff who have been extensively involved in writing PGDs have developed this skill with practice and now find PGDs relatively quick and easy to write. We have not found that providing a generic template or exemplars (unless the exemplar is for the same drug or drug group) has helped speed up development. One successful strategy is for all authors of the PGD to sit down and write the PGD together. Although more than one meeting will usually be needed, this does move the process on more quickly. Unfortunately, it is not often possible to arrange this.

No PGD can be used in the clinical setting until all signatures are obtained and the NMPG Chair has also finally signed off the PGD. Where there is a lot of enthusiasm and the service need for the PGDs is clear, signatures are obtained immediately. However, in a significant number of cases, the momentum for using the PGDs seems to lapse and they do not get signed by the authors and lead clinicians. They therefore are not put into clinical use. This has on occasion led to

delays in making changes to service delivery. Developing PGDs uses up a significant amount of staff time and other resources, and it is important that these are not wasted.

Recommendations

There are currently no penalties in place for when PGDs are not written within an appropriate timeframe, and it would be inappropriate for our NMPG to impose any. Sanctions such as refusing to approve the PGDs will affect patient care and Trust targets. PGDs are notoriously difficult to write and staff often need a significant amount of support until they become experienced. This support is usually in the form of one to one advice and feedback sessions with pharmacists. However, PGDs that are not completed waste staff time and resources. Some Trusts have a dedicated member of staff responsible for advising on and supporting PGD development. At King's, a pharmacist is the first point of contact for PGD queries and ensures all documentation and advice is up to date and easily accessible. The pharmacist also co-ordinates PGD submissions to the NMPG. However, to support and speed up the PGD process, a member of staff dedicated to PGD development,



“Our experience shows that full completion of the PGD takes significantly longer than expected”

training and follow up would be ideal. Irrespective of this, however, the following safeguards have now been put in place

- At the approval stage, NMPG will require more evidence of service need for the PGD (eg to meet Trust targets). Convenience will no longer be sufficient.
- NMPG will require written commitment from line managers that the PGD will be completed within the required time frame. Line managers will be informed if the timescale lapses.
- The PGD development flowchart will be attached to the PGD template as a reminder as the PGD is being developed
- NMPG will provide regular reports to MMG detailing which clinical areas are not completing the process in a timely fashion

Conclusions

This exercise was relatively simple to undertake, using the existing spreadsheet. Our experience shows that full completion of the PGD process takes significantly longer than expected. Many PGDs are started and not finished, and other Trusts may wish to ensure that the time and effort put into developing PGDs is used productively.

Acknowledgement

We would like to thank Chris Barrass for his comments on how best to present the results.

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PW4

Assessing the proportion of patients discharged with
medicines issued directly from the ward

C. Ling, R. Mehta, R. Onatade

Table 1

	Patients (n = 52)	%
Appropriate aspirin prescribing	36	69
Appropriate aspirin omission: CI or valid reason for non use	16	31
Inappropriate aspirin prescribing: contraindications present	0	0
Inappropriate aspirin omission	0	0
Total appropriate aspirin prescribing	52	100
Appropriate statin prescribing	22	42
Appropriate statin omission: CI or valid reason for non use	17	33
Inappropriate statin prescribing: contraindication present	5	10
Inappropriate statin omission	8	15
Total appropriate statin prescribing	39	75
Appropriate ACEI prescribing	9	17
Appropriate ACEI omission: CI or valid reason for non use	33	63
Inappropriate ACEI: contraindications present	7	13
Inappropriate ACEI omission	3	6
Total appropriate ACEI prescribing	42	81
Appropriate warfarin omission: CI or valid reason for non use	51	98
Inappropriate warfarin prescribing: CI present	1	2
Total appropriate warfarin prescribing	51	98
Appropriate dipyridamole prescribing	10	19
Appropriate dipyridamole omission: CI or valid reason for non use	31	60
Inappropriate dipyridamole omission	7	13
Inappropriate dipyridamole prescribing: CI present	4	8
Total appropriate dipyridamole prescribing	41	83
Appropriately prescribed alteplase	4	8
Appropriate alteplase omission: CI or valid reason for non use	48	92
Total appropriate alteplase prescribing	52	100

12 Assessing the proportion of patients discharged with medicines issued directly from the ward

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Introduction

Various national medicines management reports [1–3] encourage the use of dispensing-for-discharge (DFD), pre-packs and patient-own-drugs (PODs) to facilitate efficient medicine supply and speed discharge. Despite their rapid acceptance, there has been little evaluation of the effect of these initiatives on patient-related outcomes. One advantage should be quicker preparation of discharge medication as the medicines should already be available on the wards ready to be supplied to patients.

At this Trust, clinical services quality indicators have been developed, with an emphasis on those known to have a direct bearing on the patient experience or quality of care. Waiting for discharge

medication is the most frequent complaint from patients about pharmacy services. It was therefore decided that the influence of PODs, prepacks and DFD on improving discharge should be evaluated. The aim was to establish a baseline for one of the indicators, namely 'a minimum of X% of patients will be discharged directly from the ward without additional dispensary input'.

Objectives

To ascertain

- The percentage of patients discharged directly from the ward with their medicines.
- The percentage of patients discharged directly from the ward using pre-packs compared with using DFDs/PODs.
- Which areas have the highest and lowest discharges directly from the ward and why.

Method

To keep data collection manageable, 18 out of 44 wards, (436/940 beds, 46%) were selected by purposive sampling, ensuring that most of the Trust's specialities were represented (wards were selected on the basis that they provided sufficient discharges to enable adequate data collection). Over three weeks in October and November 2005, discharges from each ward were followed for five consecutive days. The names of patients discharged were obtained from the electronic patient records system. Paper copies of the completed discharge notifications were collected from the dispensary. Only discharges between 09.00–17.30 were included. Paper discharge notifications not found in the dispensary were found by other means. All prescriptions were analysed for items dispensed from pharmacy, PODs, pre packs or DFD items. Patients with no medicines or their own medicines at home were also noted.

Results

225 discharges were followed up. Of these, 33 patients did not need medicines and 19 discharge notifications could not be found. These were therefore excluded from initial analysis. 29/173 (17%) were definite direct discharges from the ward (Fig. 1). If the 19 missing discharge notifications are included, the possible range for the percentage of patients discharged directly would be between 15% (29/192, assuming 0/19 direct-ward-discharges) and 25% (48/192, assuming 19/19 direct-ward-discharges).

The Women's ward contributed the highest proportion of the Trust's direct discharges (11/29, 38%), accounting for 58% of discharges from the ward, followed by Surgery (28% of the total, 18% of discharges from the Surgical wards). The fewest were from Liver services (3.5% of the total, 8% of their discharges) and Haematology with no direct-ward-discharges.

903 items were prescribed on the 173 available discharge notifications. Of these, 603 (67%) required dispensing at the point of discharge. Women's services had the highest proportion of items already on the ward prior to discharge (44/79, 56%), while Paediatrics had the lowest (15/105, 14%). Although Haematology had no direct ward discharges, 43% (21/49) of items were already available on the ward.

Discussion

In 2004, a similar study was conducted on two renal wards. 15% of patients were discharged directly from these wards using PODs and

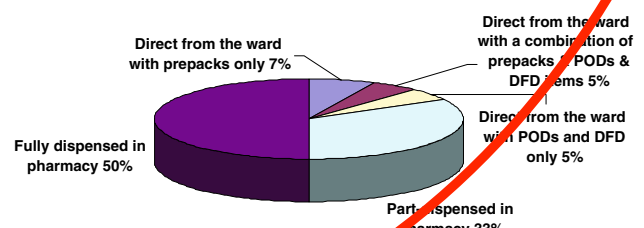


Fig. 1 Patient discharges (n = 173)

DFD [4]. Our Trust-wide data correlates well with this. In the renal study 56% of items were already available on the ward at the point of discharge. An audit at Guy's and St Thomas' Hospital showed that using PODs and DFD meant that 80% of discharge items were supplied from the ward [5]. However, information on the types of wards surveyed in this study was not provided. In comparison, in our study 33% of items were already on the wards at the time of discharge.

Women's services had the highest number of direct-discharges. This ward is mostly elective with a limited number of drugs used on discharge, and a prepack scheme in operation. The Surgical wards also use prepacks. Liver and Haematology services are highly specialist, with patients who are prescribed many different drugs which are frequently altered. In these areas, the use of DFD and pre-packs may not be appropriate.

Reporting the number of items already available on the wards does not represent the achievement of an important patient outcome—namely complete circumvention of the dispensary at the time of discharge. The development which facilitated the highest number of direct-discharges was the use of pre-packs. However, this may not be suitable for all areas. To improve discharge, DFD and the use of PODs can be increased and we have recently formally launched the use of Patients' Own Supply at Home (POSH). Relabelling drugs on the ward is also being investigated.

A limitation of the study is the reliance on the accuracy of the pharmacists' discharge summary endorsements. Also, fewer than 50% of the Trust's wards were surveyed. On the basis of our findings it was agreed that the target of 'a minimum of 25% of patients will be discharged directly from the ward without additional dispensary input'. This is a challenging but potentially achievable target.

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13 Prescribing skills of F1 and F2 junior medical staff

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Introduction

A programme of training and assessment in safe prescribing for first year foundation (F1) junior doctors is well established within our trust. On joining the trust, F1 junior doctors (and pre-registration house officers previously) are required to attend a 4 h Safe Prescribing Workshop. The content of the workshop addresses some of the core competencies for safe prescribing for F1s as defined by the Curriculum for the Foundation Years in Postgraduate Education and Training [1] and aspects of prescribing known to be prone to error locally. Six topics are taught to groups of 3 or 4 trainees. These include safe prescribing, medicines information sources, intravenous (IV) infusions, anticoagulation and thromboprophylaxis, antibiotic prescribing, and prescribing in renal impairment. Each trainee is given a workbook containing all the teaching material and in which

notes and practice prescriptions can be written during the discussion. Candidates are then required to demonstrate competence in prescribing by achieving 100% on a written prescribing skills assessment (PSA) during their training year.

In August 2006, F1 junior doctors who had been trained in our trust, and who had achieved the required standard on the PSA, were replaced by the first cohort of foundation year 2 (F2) trainees who had completed their F1 training at other hospitals. Although a training programme addressing F2 level competences had been developed we needed to confirm that the F2 trainees had already achieved the level of competence in safe prescribing required of our F1 trainees to determine whether they had additional training needs.

Objectives

(1) To assess the prescribing skills of F2 trainees in a range of prescribing situations; (2) To compare prescribing skills of taught F1 trainees with the prescribing skills of F2 trainees.

Method

In August 2006, F2 trainees joining the trust were required to complete the prescribing skills assessment prior to attending the F2 Safe Prescribing Workshop. F1 trainees completed the same prescribing skills assessment one week after attending the F1 Safe Prescribing Workshop. Answers given on all PSAs were marked by the investigators according to an agreed marking scheme. Correct answers were given a score of 1. Incorrect answers and unattempted questions were given a score of 0.

Results

Thirty-one F2 trainees completed the assessment. Results of two of these were excluded as they had completed their F1 training at King's College Hospital (KCH) and had achieved 100% on prior assessment. Results of 29 F2 trainees were therefore included in the assessment. Thirty-eight F1 trainees completed the assessment.

Two F1 trainees scored the maximum 13/13 (100%). The mean score of F1 trainees was 9.1 (range 3–13). No F2 trainees scored the maximum. The mean score of F2 trainees was 7.7 (range 1–12). The mean score of F1 trainees was significantly better than the mean score of F2 trainees ($P(T \leq t)$ two tail = 0.02).

Scores of F1 and F2 trainees on each of the 13 questions are shown in Table 1.

Discussion

The questions on the assessment tool test the ability to prescribe safely in a range of common situations. F2 trainees are likely to have encountered similar situations during their F1 training. Depending on the trust they completed their F1 training in, they will have received prescribing training delivered by pharmacists although it is not known whether any of these trusts deliver the same workshops that are delivered at KCH. The results of the F2 assessment is disappointing especially as F1 trainees who completed their training at this trust had demonstrated competence in all 13 scenarios.

The F1 trainees had received targeted training in the Safe Prescribing Workshops but had only been working on wards and prescribing for inpatients for less than 3 weeks when they completed the assessment. This targeted training appeared to be superior to one year's experience in promoting safe prescribing practices.

The training package prepared for the first group of F2 trainees joining the trust was put together assuming that they had the core skills in safe prescribing we consider essential for F1 trainees. Our results demonstrate that, in future, or until F1 prescribing skills training is standardised across trusts, our F2 training programme will need to be revised to include more of the core elements we currently teach to F1 trainees.

Acknowledgements

Richard Castles and Deepa Karavadia, pharmacy vacation students, for assisting with data collection for this project.

PW5

Adherence to, and pharmacists' views of, antimicrobial
switch and stop policies

S. Patel, R. Onatade, J. G. Davies

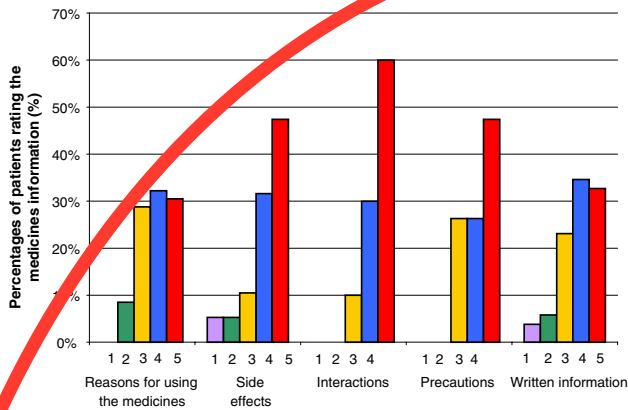


Fig. 1 Patients' ratings of the quality of information received

Discussion

This study revealed inconsistencies in the information on medicines supplied to patients discharged from our trust. However, the majority of patients seemed to be satisfied with the information provided, and when given, rated it highly. There is scope for improvement to ensure patients receive sufficient information to use their medicines safely, and pharmacists have a large role to play in this. The scope of this study meant that a number of patients were excluded. This is a limitation as many of the excluded patients probably had a greater need for medicines information and counselling. Future work should include these groups of patients.

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P26. Adherence to, and pharmacists' views of, antimicrobial switch and stop policies

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Introduction

The Department of Health encourages the use of antimicrobial intravenous (IV) to oral switch and oral 'stop' policies to help improve the appropriateness of antibiotic use [1]. At King's, these policies were launched in 2004. When specified criteria are met, pharmacists are authorised to switch patients from an intravenous to oral antibiotic, and for oral therapy, unless a valid period is stated, to stop an antibiotic prescription after 7 days by placing a sticker on the drug chart on day 5, giving 2 days grace. Improvements in antibiotic prescribing are monitored via the annual point prevalence study [2] however, anecdotally, it was known that pharmacists were not applying the policies as written.

Objectives

- To evaluate adherence to the antibiotic prescribing policies
- To identify the perceived barriers preventing compliance and ideas for improvement

Methods

Over a period of 4 weeks in October/November 2007, 27/44 wards were visited once. Current (prospective) and completed (retrospective)

antibiotic prescriptions on the drug chart in current use were reviewed. Exclusions were critical care areas, haematology/oncology wards, private patients' ward and wards known to use very few antibiotics. Retrospective data collected: how many IV antibiotics were switched or stopped after 48 h, if oral antibiotics with no specified course length were stopped after 5 days and if not, if a sticker was applied. Prospective data collected: how many oral antibiotics should be stopped or IV antibiotics switched, comparing patient and drug data against the criteria. In the last week of data collection, face to face semi-structured interviews were conducted with a purposive sample of 12 clinical pharmacists who worked on the wards surveyed. Descriptive statistics were used in analysis.

Results

One hundred and forty five patients were receiving or had received, 227 antibiotics (144 IV, 113 oral; 132 completed, 125 ongoing) (Table 1).

The IV switch policy was only applicable to 16% (9/58) of current IV prescriptions. The mean duration of these nine prescriptions was 5.8 days (range 3 to 9 days). There was no evidence of an attempt to switch any to oral therapy. The 91% (29/32) completed oral courses which lasted longer than 5 days with no documented reason had no stickers applied. The 87.5% (21/24) current oral prescriptions which continued for more than 5 days without a documented reason also showed no obvious attempt to apply the stop policy. 62% (13/21) of these prescriptions were of greater than 7 days duration.

Table 1 Switching and stopping rates for IV and oral antibiotic courses

	Completed IV courses (n = 75)	Current IV courses (n = 69)	Completed oral courses (n = 57)	Current oral courses (n = 56)
IV 48 hrs or less	20% (15/75)	16% (11/69)		
IV greater than 48 hrs	80% (60/75)	84% (58/69)		
Switched to oral	13% (2/15)			
Stopped with no oral prescribed	87% (13/15)			
Oral less than 5 days			21% (12/57)	57% (32/56)
Oral 5 days or more			79% (45/57) 5 days = 23% 13/57, more than 5 days = 56%, 32/57	43% (24/56)
Could not or should not be switched/ stopped, based on criteria or documented reason		84% (49/58)	9% (3/32)	12.5% (3/24)

Interviews: 12 pharmacists (mean years of practice 3.5, range 1–7) were interviewed.

5/12 interviewees thought that the I.V antibiotic switch policy was successful for clinical application, 6/12 said it wasn't and 1/12 said partly. 7/12 said the oral antibiotic stop policy was successful for clinical application, 3/12 said it wasn't and 2/12 said partly. 6/12 said that the policies were clear so they could apply them to individual patients and 6/12 said partly. Overall, 8/12 pharmacists said they did apply the policies, 4/12 said they applied them partly (Table 2).

Two other options offered were 'not my role: antibiotic pharmacist's responsibility' and 'don't want to alienate or exclude doctors'. None of the interviewees agreed with these reasons. Interviewees suggestions for improvement were that the policies should cover more infections, more training and confidence is needed for pharmacists, to increase the availability of stickers, use posters to advertise policies,

Table 1 Reasons why interviewees may not always apply the policies

Reasons for not applying the policies	No. of pharm. agreeing with suggestion
Liability issues	2
Lack of training/confidence	7
Lack of time	6
Difficult to contact doctors/microbiologists	6
Policy too rigid	11
Not my role: Doctors' responsibility	2
Not my role: Microbiologists' responsibility	2

have more contact with microbiology, advertise the policies to doctors and put more information about the policies on the wards.

Discussion

The IV antibiotic switch policy only applied to 16% of prescriptions seen. This suggests that either the policy has too many exclusions or that the prescribing of IV antibiotics at this Trust needs little improvement. There needs to be a greater focus on stopping oral antibiotics. 67% of pharmacists interviewed said they applied the policy and 58% thought that the oral stop policy was successful, yet in practice it was not being implemented and adherence was only 12.5%. This suggests a lack of understanding of their responsibilities under the policy and/or a belief that other interventions fulfil the requirements. More information and training and better publicity are needed to improve adherence. Changes to be made include regular ongoing contact between clinical pharmacists, the antibiotic pharmacist team and medical microbiologists, and keeping stocks of stickers on wards. The IV switch policy will be reviewed and updated in view of the fact that it is felt to be too rigid and restrictive.

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P27. Audit of compliance of potassium phosphate with a strong potassium policy

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Introduction

Hypophosphataemia is often seen in hospitalised patients. In intensive care areas a low serum phosphate level is reported in up to 28% of patients [1]. In the critical care areas at Southampton University Hospitals NHS Trust, a large teaching trust, the treatment for hypophosphataemia is typically Intravenous replacement. The IV phosphate replacement primarily used at the Trust is Dipotassium Hydrogen Phosphate 17.42% (K_2HPO_4) whereas some trusts use phosphate polyfusers.

K_2HPO_4 is listed as a Strong potassium solution ($K = 20$ mmol/10 ml) in the National Patient Safety Agency (NPSA) alert issued in 2002 [2]. As a result of this NPSA alert, the use of Strong potassium solutions was restricted to Critical Care Areas only and a local policy was developed. The local policy gives guidance on the storage,

handling and administration of intravenous Strong potassium solutions. Administration of Strong potassium solutions (Potassium Chloride 20% and K_2HPO_4) to patients is recorded in a special Strong potassium book on each Critical Care Area. These areas are widely distributed within the trust and include three separate intensive care units for Cardiac, Neurological and General patients as well as two separate high dependency units for Surgical and Medical patients.

Objectives

- 1 To examine in all Critical Care Areas if K_2HPO_4 is stored as required by the local policy.
- 2 To compare, in all Critical Care Areas, if entries made in Strong potassium books match the issue data from the pharmacy computer.
- 3 To determine, on Cardiac Intensive Care only, if the administration of K_2HPO_4 to patients is being recorded in the Strong potassium book.

Method

Data was collected between 1st January 2007 and 30th June 2007. On each of the 5 critical care areas it was recorded whether K_2HPO_4 was stored in its original packaging and in a separate place on the ward from normal saline, water for injection and lidocaine.

The relevant Strong potassium books were examined and the number of K_2HPO_4 entries were compared to the number of ampoules issued to all Critical Care Areas from pharmacy.

A pathology computer printout was obtained for all patients on Cardiac Intensive Care with a 'low' phosphate level (< 0.6 mmol/L). This printout was compared to the relevant entries in the Strong potassium book. Anomalies between the printout and record books were identified and the relevant patient notes retrieved. These notes were examined to find out what, if anything, was given to correct hypophosphataemia.

Results

In all 5 Critical Care areas, 100% of K_2HPO_4 ampoules were stored according to the policy.

However, the number of K_2HPO_4 ampoules issued from pharmacy to Critical Care Areas differed from the records made in the relevant Strong potassium books as shown in Table 1.

In the 6 months audited 64 patients on Cardiac Intensive Care had 'low' phosphate levels. 42 patients received K_2HPO_4 but only 22 records were made in the Strong potassium book. These 22 entries in the Strong potassium book relate to 15 patients with 'low' phosphate levels and 7 patients without.

The notes of 49 Patients on Cardiac Intensive Care with low phosphate levels and no Strong potassium book entry were examined (see Table 2).

Table 1 The number of K_2HPO_4 ampoules issued from pharmacy and recorded in the strong potassium book for each critical care area

No. of amps K_2HPO_4	Cardiac	Neuro	General	Surgical	Medical
Issued from pharmacy	90	0	90	60	80
Recorded in book	22	0	7	57	66

Table 2 The clinical practice of cardiac intensive care

Clinical practice followed	Given K_2HPO_4 and book entry	Given K_2HPO_4 and no book entry	Other treatments	No treatment
No. of patients	22	20	10	19

Adherence to, and pharmacists' views of, antimicrobial switch and stop policies

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Introduction

The Department of Health encourages the use of antimicrobial intravenous (IV) to oral switch and oral 'stop' policies to help improve the appropriateness of antibiotic use. At King's, these policies were launched in 2004. When specified criteria are met, pharmacists are authorised to switch patients from an intravenous to oral antibiotic, and for oral therapy, to stop an antibiotic prescription after 7 days by placing a sticker on the drug chart on day 5, giving 2 days grace. Improvements in antibiotic prescribing are monitored via the annual point prevalence study¹; however, anecdotally, it was considered that pharmacists were not applying the policies as written.

Objectives

- To evaluate adherence to the antibiotic prescribing policies
- To identify the perceived barriers preventing compliance, and ideas for improvement

Methods

- The study took place over 4 weeks in October and November 2007. Ethics permission was not needed.
- 27/44 wards (approx 650 beds) at King's were each visited once.
- Excluded areas were critical care areas, haematology/oncology wards, private patients' ward and wards known to use very few antibiotics
- Ongoing (prospective) and completed (retrospective) antibiotic prescriptions on the drug chart in current use were reviewed
- Prospective and retrospective antibiotic and patient data were collected from drug charts and medical notes of in-patients. Data relating to type, dose and duration of antibiotic was collected plus relevant clinical information
- In the last week of data collection, face to face semi-structured interviews were conducted with a purposive sample of clinical pharmacists who worked on the wards surveyed to identify any barriers to implementing these policies and to highlight potential improvements
- Descriptive statistics were used in analysis

Results

- One hundred and forty five patients were receiving or had received, 257 antibiotics (144 IV, 113 oral; 132 completed, 125 ongoing).

Table 1. Comparison of antibiotic prescriptions with policy requirements

	Completed IV courses (n = 75)	Ongoing IV courses (n = 69)	Completed po courses (n = 57)	Ongoing po courses (n = 56)
IV < 48 hrs or less	20% (15/75)	16% (11/69)	-	-
IV greater than 48 hrs switched to po	80% (60/75)	84% (58/69)	-	-
	9% (7/75)	-	-	-
	48 hrs or less = 215	-	-	-
	Greater than 48 hrs = 908	-	-	-
stopped, no po drug subsequently prescribed	87% (131/15)	-	-	-
po less than 5 days	-	24% (12/57)	79% (45/57)	57% (32/56)
po 5 days or more	-	-	79% (45/57) greater than 5 days = 3287	43% (24/56)
could not or should not be switched (IV) or stopped (po) based on criteria or documented reason	-	84% (49/58)	-	12.5% (8/24)

Results (continued)

- The IV switch policy was only applicable to 16% (9/58) of ongoing IV prescriptions.
- The mean duration of these nine prescriptions was 5.8 days (range 3 to 9 days).
- There was no evidence of an attempt to switch any to oral therapy.
- The 91% (29/32) completed oral courses which lasted longer than 5 days with no documented reason had no stickers applied.
- The 87.5 % (21/24) ongoing oral prescriptions which continued for more than 5 days without a documented reason also showed no obvious attempt to apply the stop policy.
- 62% (13/21) of these prescriptions were of greater than 7 days duration.

Interviews:

12 pharmacists (mean years of practice 3.5, range 1 – 7), were interviewed. 5/12 interviewees thought that the IV antibiotic switch policy was successful for clinical application, 6/12 said it wasn't and 1/12 said partly. 7/12 said the oral antibiotic stop policy was successful for clinical application, 3/12 said it wasn't and 2/12 said partly. 6/12 said that the policies were clear so they could apply them to individual patients and 6/12 said partly. Overall, 8/12 pharmacists said they did apply the policies, 4/12 said they applied them partly.

Table 2. Pharmacists' reasons for not applying the policies

Reasons for not applying the policies	No. of pharmacists agreeing with suggestion
liability	2
lack of training/confidence	7
lack of time	6
difficult to contact doctors or microbiologists	6
policy too rigid	11
doctors' responsibility	2
microbiologists' responsibility	2

Suggestions for improvement

- The policies should cover more infections
- Pharmacists need more training and confidence
- Increase the availability of stickers
- Have more contact with microbiology
- Advertise the policies to doctors
- Put more information about the policies on the wards

Discussion and Conclusions

- The IV antibiotic switch policy only applied to 16% of prescriptions seen. This suggests that either the policy has too many exclusions or that the prescribing of IV antibiotics at this Trust needs little improvement.
- There needs to be a greater focus on stopping oral antibiotics.
- 67% of pharmacists interviewed said they applied the policy and 58% thought that the oral stop policy was successful, yet in practice it was not being implemented and adherence was only 12.5%. This suggests a lack of understanding of their responsibilities under the policy and/or a belief that other interventions fulfil the requirements.
- More information and training and better publicity are needed to improve adherence.
- Changes to be made include regular ongoing contact between clinical pharmacists, the antibiotic pharmacist team and medical microbiologists, and keeping stocks of stickers on wards.
- The IV switch policy will be reviewed and updated in view of the fact that it is felt to be too rigid and restrictive.
- Organisations planning to introduce similar policies should note the need for continual promotion and training and should endeavour to ensure that policies are not to rigid

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PW6

Quality and quantity of information on medicines given
to patients discharged from hospital

N. Khudairi, R. Onatade, N. Patel

19% (88/473) of missed doses or 1.3% of prescribed doses). Due to the small numbers and the labour-intensive nature of the audit, the severity of the omissions was scored. The 45 avoidable missed doses in the second audit represented 30 different scenarios. Using the recorded information, seven healthcare professionals (4 pharmacists, 2 nurses, 1 doctor) independently rated the severity of the 30 scenarios, using a scale of 0 to 10 [4]. 60% (18/30) of the scenarios scored between 0–3.9 and 40% between 4–6.9. No scenarios were rated 7 or above. The two highest scoring scenarios (both 6.1) involved missed doses of Truvada and morphine sulphate. Others rated above 4 included cardiovascular, opiate and anti-infective drugs.

Discussion

Direct comparisons with the literature are difficult due to methodological and other differences. Haw et al in their study in a psychiatric unit found an omission rate of 7% of prescribed doses [5]. Radley et al found that 31% of patients in an admissions ward and 21% of patients in a surgical receiving unit missed doses of their medication [3]. The results of the severity scores are consistent with the literature on classes of drugs associated with adverse drug events. Auditing all omitted doses appears to be of limited usefulness in assessing clinical care quality. Future work will involve identifying a list of drugs to monitor and using experienced clinical pharmacists to collect data, including full details of the clinical scenarios.

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P25. Quality and quantity of information on medicines given to patients discharged from hospital

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Introduction

Clinical pharmacy services at this trust have been audited to monitor and improve quality [1, 2]. However, none of the indicators consider patient outcomes, despite this being an important measure of the quality of healthcare. Two important pharmacy related patient outcomes are proactively supplied information on medicines and discrepancies/errors between intended medication on discharge and that actually taken or supplied. A study was designed to consider the feasibility of using patients' opinions and experiences of discharge medication as an indicator of the quality of clinical pharmacy services. The results of one aspect of the study, the information received on medicines are reported here.

Objectives

- To identify the key pieces of information that patients expect to receive about their medicines
- To measure the proportion of patients provided with this information upon discharge from King's.
- To determine how patients rate the information received

Methods

This study took place between October and November 2007. Ethics approval was not required. A small exploratory study was conducted with randomly selected inpatients due to be discharged within the next three days. In face to face interviews, patients were asked what type of information about their medicines they would like to receive. They were then followed up via a telephone interview 10–14 days after discharge using a structured questionnaire compiled from their original answers and information from the literature. For the main study, each ward (except critical care units) in the trust was then visited in turn and eligible patients due for discharge within 1 to 3 days were approached to participate. Inclusion criteria were: the patient would be discharged with prescribed medication(s), to their home, or a friend's or relative's and they knew the telephone number they could be contacted on. Excluded patients were those who did not speak or read English or read their medicine labels, were unable to use a telephone, to be discharged to a residential or nursing home, to be discharged without medication, unwilling to be telephoned or take part, and anyone who was sleeping or otherwise engaged when the investigator was on the ward. All patients or carers were asked to consent to their participation in the study. They were asked to identify the most suitable date and/or time of day to be phoned and to have their medicines and discharge letter with them at the time of the call. Consenting patients were telephoned 12 to 28 days after discharge and interviewed using a refined version of the original questionnaire.

Results

Ten patients took part in the exploratory study, eight of whom were interviewed after discharge. These results are not included in the main study. For the main study, 205 patients were approached and 118 consented to take part. 79/118 patients were interviewed, a 67% response rate. Age range—under 12 yrs, 5%; 12–17 years, 5%; 18–65 yrs, 51% and over 65 yrs, 39%. In response to the question, *were you informed at KCH what your medicines were used for?* 46% (36/79) said yes, for all medicines, 29% (23/79) said yes, for some medicines and 20% (16/79) said no, not for any medicines. 5% (4/79) were not sure. 38% (30/79) of patients were told what to do about further supplies. 52% (50/79) were given verbal information just before discharge, 22% (11 patients, 14% of all interviewees) of whom said the information came from a pharmacist. 24% (19/79) of patients were given contact information for further questions and queries, the largest source of this information being nurses (10/19, 53%). 21% (4 patients or 5% of all interviewees) obtained this information from a pharmacist. 15% were not sure if they had been given contact details (Table 1, Fig. 1).

1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent

Scores of 'very good' or 'excellent' were given by 63% of patients who received information on reasons for medicines, 73% for side effects, 90% for interactions and 73% for written information. Fifty seven patients were asked to rate their overall satisfaction with information provided about their medicines. 7% were very unsatisfied or unsatisfied and 66% were very satisfied or satisfied. The remainder had no opinion.

Table 1 Responses to other questions about the type of information provided

	Yes	No	Cannot remember/not sure
Information provided on any side effects	24%	73%	1%
Information provided on any interactions	13%	87%	0
Information provided on any precautions	4%	75%	1%
Written medicines information provided	76%	18%	6%

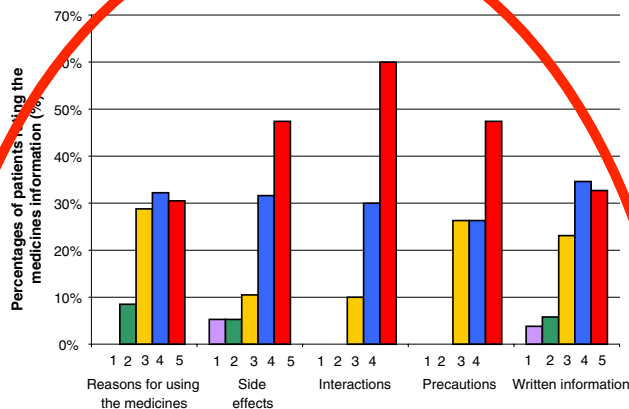


Fig. 1 Patients' ratings of the quality of information received

Discussion

This study revealed inconsistencies in the information on medicines supplied to patients discharged from our trust. However, the majority of patients seemed to be satisfied with the information provided, and when given, rated it highly. There is scope for improvement to ensure patients receive sufficient information to use their medicines safely, and pharmacists have a large role to play in this. The scope of this study meant that a number of patients were excluded. This is a limitation as many of the excluded patients probably had a greater need for medicines information and counselling. Future work should include these groups of patients.

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P26. Adherence to, and pharmacists' views of antimicrobial switch and stop policies

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Introduction

The Department of Health encourages the use of antimicrobial intravenous (IV) to oral switch and oral 'stop' policies to help improve the appropriateness of antibiotic use [1]. At King's, these policies were launched in 2004. When specified criteria are met, pharmacists are authorised to switch patients from an intravenous to oral antibiotic, and for oral therapy, unless a valid period is stated, to stop an antibiotic prescription after 7 days by placing a sticker on the drug chart on day 5, giving 2 days grace. Improvements in antibiotic prescribing are monitored via the annual point prevalence study [2] however, anecdotally, it was known that pharmacists were not applying the policies as written.

Objectives

- To evaluate adherence to the antibiotic prescribing policies
- To identify the perceived barriers preventing compliance and ideas for improvement

Methods

Over a period of 4 weeks in October/November 2007, 27/44 wards were visited once. Current (prospective) and completed (retrospective)

antibiotic prescriptions on the drug chart in current use were reviewed. Exclusions were critical care areas, haematology/oncology wards, private patients' ward and wards known to use very few antibiotics. Retrospective data collected: how many IV antibiotics were switched or stopped after 48 h, if oral antibiotics with no specified course length were stopped after 5 days and if not, if a sticker was applied. Prospective data collected: how many oral antibiotics should be stopped or IV antibiotics switched, comparing patient and drug data against the criteria. In the last week of data collection, face to face semi-structured interviews were conducted with a purposive sample of 12 clinical pharmacists who worked on the wards surveyed. Descriptive statistics were used in analysis.

Results

One hundred and forty five patients were receiving or had received, 257 antibiotics (144 IV, 113 oral; 132 completed, 125 ongoing) (Table 1).

The IV switch policy was only applicable to 16% (9/58) of current IV prescriptions. The mean duration of these nine prescriptions was 5.8 days (range 3 to 9 days). There was no evidence of an attempt to switch any to oral therapy. The 91% (29/32) completed oral courses which lasted longer than 5 days with no documented reason had no stickers applied. The 87.5% (21/24) current oral prescriptions which continued for more than 5 days without a documented reason also showed no obvious attempt to apply the stop policy. 62% (13/21) of these prescriptions were of greater than 7 days duration.

Table 1 Switching and stopping rates for IV and oral antibiotic courses

	Completed IV courses (n = 75)	Current IV courses (n = 69)	Completed oral courses (n = 57)	Current oral courses (n = 56)
IV 48 hrs or less	20% (15/75)	16% (11/69)		
IV greater than 48 hrs	80% (60/75)	84% (58/69)		
Switched to oral	13% (2/15)			
Stopped with no oral prescribed	87% (13/15)			
Oral less than 5 days			21% (12/57)	57% (32/56)
Oral 5 days or more			79% (45/57) 5 days = 23% 13/57, more than 5 days = 56%, 32/57	43% (24/56)
Could not or should not be switched/ stopped, based on criteria or documented reason		84% (49/58)	9% (3/32)	12.5% (3/24)

Interviews: 12 pharmacists (mean years of practice 3.5, range 1–7) were interviewed.

5/12 interviewees thought that the I.V antibiotic switch policy was successful for clinical application, 6/12 said it wasn't and 1/12 said partly. 7/12 said the oral antibiotic stop policy was successful for clinical application, 3/12 said it wasn't and 2/12 said partly. 6/12 said that the policies were clear so they could apply them to individual patients and 6/12 said partly. Overall, 8/12 pharmacists said they did apply the policies, 4/12 said they applied them partly (Table 2).

Two other options offered were 'not my role: antibiotic pharmacist's responsibility' and 'don't want to alienate or exclude doctors'. None of the interviewees agreed with these reasons. Interviewees suggestions for improvement were that the policies should cover more infections, more training and confidence is needed for pharmacists, to increase the availability of stickers, use posters to advertise policies,

The quality and quantity of information on medicines given to patients discharged from hospital

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Introduction

None of the current quality indicators of our clinical pharmacy service properly consider patient outcomes, although this is an important measure of the quality of care. Patients would like more information than they currently receive about their medication¹. Also, relevant information may improve concordance and reduce adverse events^{2,3}. Providing this information to patients is an important role for pharmacists⁴. Therefore it was considered that this may be a suitable marker of the quality of a clinical pharmacy service. This study was carried out to obtain a baseline for the quality and quantity of information received by patients on discharge and to assess the feasibility of using this as an indicator of the quality of clinical pharmacy services at King's.

Objectives

- To identify the key pieces of information that patients expect to receive about their medicines
- To measure the proportion of patients provided with this information upon discharge from King's.
- To determine how patients rate the information received

Method

The study took place in October and November 2007. Ethics permission was not needed.

Exploratory study:

- Ten inpatients due to be discharged within three days were randomly selected and approached. During a face to face interview, they were asked what information they would like to receive about their medicines. Using information from the literature and the answers from the interviews, a structured questionnaire was constructed to ask patients about the type of information actually received, the quality of such information and overall satisfaction with the information. Patients were followed up using the questionnaire by a phone call 10 – 14 days after discharge.

Main study:

- Each ward (except critical care) in the trust was visited and eligible patients due for discharge within 1 to 3 days were approached to participate.
- Inclusion criteria: the patient would be discharged with prescribed medication(s), to their home, or a friend's or relative's and they knew the telephone number they could be contacted on.
- Exclusion criteria: patients not meeting all inclusion criteria, non-consenting patients, who did not speak English, were unable to use a telephone, unable to read English or read their medicines labels and those sleeping or otherwise engaged when the investigator was on the ward. All patients or carers were asked for consent
- Each patient/carer was telephoned 12 to 28 days after discharge and interviewed using a refined version of the original questionnaire.

Results

- Exploratory study: Information requirements were what their medication was used for, the type of medicine, interactions, side effects, duration of therapy, a contact number in case of questions and written information
- Main study: 205 patients were approached and 118 consented to take part. 79/118 patients were interviewed, a 67% response rate. 43% respondents were male. Age range – up to 17 years, 10%; 18 – 65 yrs, 51% and over 65 yrs, 39%. 14% of interviewees were employed in a health-related job

Discussion and Conclusions

- This study has shown that patients discharged from this trust are not regularly receiving the required information. These results are consistent with published literature.
- Despite this, the majority of patients gave high overall satisfaction scores to the information provided. This reflects the fact that patients tend to rate highly the care they receive.
- The quality of information given was rated highly, although majority of patients did not receive all recommended information.
- There is scope for improvement to ensure patients receive sufficient information to use their medicines safely, and pharmacists have a large role to play in this.
- Assuming that ensuring the provision of information on medicines to patients is a pharmacy responsibility, this measure is suitable to use as an outcome indicator of the quality of clinical pharmacy services. The methodology is practical and feasible to use on a smaller scale.

Limitations:

- Due to the scope of the study, a number of patients were excluded. Some excluded groups may have a greater need for information, and may be less likely to receive such information than the included patients. Therefore percentages of patients receiving information, as well as satisfaction rates, may underestimate the true incidence.
- It was intended to contact patients 10 – 14 days after discharge, however this proved very difficult, and patients were phoned up to 28 days after discharge. This time lag may have affected how much was recalled.
- It is impossible to assess bias introduced by not having the information from refusals and non-responders

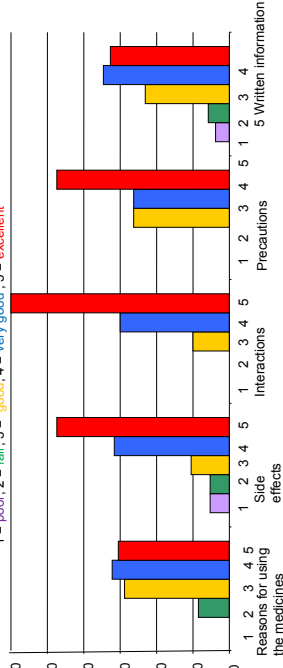
Results (continued)

Table 1. Proportion of patients reporting receiving specific types of information

Were you ...	Yes	No	Cannot remember/ not sure
Informed what your medicines were for?	for all – 46%	20%	5%
told what to do about further supplies?	for some – 29%	63%	4%
given any verbal information about your medicines?	63%	27%	10%
given contact information for further queries?	24%	56%	20%
given any information on side effects?	24%	75%	1%
given any information on interactions?	13%	87%	0
given any information on precautions (special instructions)?	24%	75%	1%
given any written information?	76%	18%	6%

*Not applicable = 1%
67 patients were asked about their overall satisfaction with information provided: 66% (44/67) were satisfied or very satisfied, 10% were unsatisfied or very unsatisfied and 24% had no opinion.

Figure 1. The quality of specific pieces of information provided (% of patients giving the rating)
1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent



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Assessing the Quality of the Clinical Pharmacy Service to Patients Discharged from Hospital

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In partial fulfilment of the requirements for the MPharm degree
King's College, University of London

February 2008

ACKNOWLEDGMENTS

I am grateful to all those patients that have participated in this study. Additionally, I would like to thank the Pharmacy department at King's College Hospital for their cooperation and facilities which allowed the study to be completed successfully.

Much appreciation and gratitude is highly expressed to both Ms Raliat Onatade and Dr. Nilesh Patel for their knowledge, support, time and guidance throughout this study.

I would like to thank my family and friends for their continuous support which was crucial to me in order for this study to be accomplished.

PW7

The use of missed doses as an indicator for assessing
the quality of clinical pharmacy services: a comparison
of two audits

R. Onatade, C. Bell, M. Garcia, R. Mehta

- 5 patients—‘Nil by Mouth’
- 5 patients—Not given—‘no ward supply’
- 1 patient—Refused medication

In ‘Method Two’ 41 patient were assessed over 2 months. Of the 632 doses requiring administration, 587 doses were given i.e. 93% of doses were given as prescribed. The main reasons charted by nursing staff for why the patients did not receive their medication were: ‘no medication available’ or ‘patient refused’.

Of the 72 Patient Satisfaction Questionnaires sent out post-discharge, 64 were returned. On average 62% of patients stated that they had received their medication on time in hospital, however 24% did not.

Discussion

The study highlighted a significant medication issue that PD patients face when admitted into hospital. All 3 parts of the study indicate that in-patients do not get all of their usual prescribed PD drugs on time and this is an obvious concern to patients as shown in the response to the post-discharge questionnaire.

The problem of ensuring that patients receive their PD medication in hospital has been recognised nationally and has prompted the PD Society’s most recent ‘Get it on Time’ campaign [1]. To address the issues highlighted in the study and to support the national campaign, educational activities have been undertaken. These aimed to raise awareness among medical, nursing and pharmacy staff of the need to avoid any missed or late doses of PD medications where possible. In particular, the pharmacy department has taken steps to facilitate 24-h access to the full range of PD medication.

Reference

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P24. The use of missed doses as an indicator for assessing the quality of clinical pharmacy services: a comparison of two audits

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Introduction

Assessing and monitoring the quality of services is important in healthcare. Audits of the indicators for two of our clinical pharmacy quality standards have previously been presented [1, 2]. A third standard, taken from the literature, proposes ‘*there is seamless continuation of prescribed therapy to achieve the desired patient outcome*’ [3] It was agreed to test the use of missed doses as an indicator for this standard as preventing omission of prescribed doses comprises several aspects of clinical pharmacy, not only supply. This study was undertaken as the extent and significance of missed doses at this trust was unknown.

Objectives

- To determine a baseline figure for the incidence of missed doses at King’s
- To determine the utility of missed doses as an indicator of the quality of clinical pharmacy services
- To establish a target standard for improving missed doses

Methods

Two audits were conducted using identical methodologies, between November 2006 and January 2007, and again in August 2007. Approximately 415 beds (representing all the specialties within the hospital, including critical care) were selected. These were the same wards used to assess other clinical pharmacy quality indicators [2]. On each ward, the total number of regular doses prescribed and omitted on all drug charts from 8 am of the previous day to 8 am on

the visit day were recorded for each patient. Large volume infusions or those given via syringe drivers were excluded. If no reason for omission was recorded on the drug chart, the patients’ notes, the nursing team and the pharmacist looking after the patient were consulted. If the investigator was told that a dose has actually been given, it was not counted as missed. Where a dose had been missed, all other prescribed medication was recorded. In the first audit, the reasons for omissions were analysed thematically and codes developed and assigned. The missed doses in the second audit were assigned the same codes.

Results

First audit: 41% (132/404) patients had at least one dose of their medication omitted in the 24-h period before the visit. 6.9% (473/6888) of doses were omitted. Table 1 shows the codes developed and the associated percentages of missed dose in each audit.

Table 1 Coding frame for missed doses

Code	Reason for missed dose	2006 % (n)	2007 % (n)
A	Patient refused, against clinical advice	7 (33)	45.5 (205)
B1	No supply available during working hours	1.9 (9)	1.1 (5)
B2	Drug ordered but not on ward	1.1 (5)	1.6 (7)
B3	No supply available during working hours: non-formulary	0.6 (3)	0 (0)
C1	No supply available outside working hours	5.9 (28)	0.2 (1)
C2	No supply available outside working hours: non-formulary	0.2 (1)	0 (0)
D1	Clinical decision: NBM (pre-/post-op, unable to swallow, aspiration pneumonia)	14.6 (69)	30.4 (137)
D2	Clinical decision: contra-indicated or not clinically indicated	13.5 (64)	8.7 (39)
D3	Clinical decision: not required, pt, medical or nursing decision	32.1 (152)	1.6 (7)
D4	Clinical decision: therapeutic duplication	2.7 (13)	1.1 (5)
D5	Clinical decision: unable to give by prescribed route	8.9 (42)	7.1 (32)
D6	Clinical decision: other	1.1 (5)	0 (0)
E	Patient not on ward	3.8 (18)	0.4 (2)
F	Unknown	6.6 (31)	3 (14)
	Total	100	99.9

The 12% of omissions (56/473) or 0.8% of prescribed doses, coded B1, B2 and D5 were deemed to be easily avoidable and were chosen as targets for reduction. As this was 0.8% (56/6888) of the total number of doses prescribed, subtracting 0.8% from 6.9% led to an initial target statement that ‘*Patients will receive a minimum of 94% of prescribed doses*’.

Second audit: 32% (130/408) of patients had a dose of their medication omitted. This represented 6.2% (464/7483), of prescribed doses and patients therefore received 93.8% of prescribed doses. The codes classed as potentially avoidable were expanded to include all supply (codes B1 - B3, C1, C2, D5). This was 10% of the missed doses (45/464) or 0.6% of prescribed doses. (First audit equivalent =

19% (88/473) of missed doses or 1.3% of prescribed doses). Due to the small numbers and the labour-intensive nature of the audit, the severity of the omissions was scored. The 45 avoidable missed doses in the second audit represented 30 different scenarios. Using the recorded information, seven healthcare professionals (4 pharmacists, 2 nurses, 1 doctor) independently rated the severity of the 30 scenarios, using a scale of 0 to 10 [4]. 60% (18/30) of the scenarios scored between 0–3.9 and 40% between 4–6.9. No scenarios were rated 7 or above. The two highest scoring scenarios (both 6.1) involved missed doses of Truvada and morphine sulphate. Others rated above 4 included cardiovascular, opiate and anti-infective drugs.

Discussion

Direct comparisons with the literature are difficult due to methodological and other differences. Haw et al in their study in a psychiatric unit found an omission rate of 7% of prescribed doses [5]. Radley et al found that 31% of patients in an admissions ward and 21% of patients in a surgical receiving unit missed doses of their medication [3]. The results of the severity scores are consistent with the literature on classes of drugs associated with adverse drug events. Auditing all omitted doses appears to be of limited usefulness in assessing clinical care quality. Future work will involve identifying a list of drugs to monitor and using experienced clinical pharmacists to collect data, including full details of the clinical scenarios.

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P25. Quality and quantity of information on medicines given to patients discharged from hospital

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Introduction

Clinical pharmacy services at this trust have been audited to monitor and improve quality [1, 2]. However, none of the indicators consider patient outcomes, despite this being an important measure of the quality of healthcare. Two important pharmacy related patient outcomes are proactively supplied information on medicines and discrepancies/errors between intended medication on discharge and that actually taken or supplied. A study was designed to consider the feasibility of using patients' opinions and experiences of discharge medication as an indicator of the quality of clinical pharmacy services. The results of one aspect of the study, the information received on medicines are reported here.

Objectives

- To identify the key pieces of information that patients expect to receive about their medicines
- To measure the proportion of patients provided with this information upon discharge from King's.
- To determine how patients rate the information received

Methods

This study took place between October and November 2007. Ethics approval was not required. A small exploratory study was conducted with randomly selected inpatients due to be discharged within the next three days. In face to face interviews, patients were asked what type of information about their medicines they would like to receive. They were then followed up via a telephone interview 10–14 days after discharge using a structured questionnaire compiled from their original answers and information from the literature. For the main study, each ward (except critical care units) in the trust was then visited in turn and eligible patients due for discharge within 1 to 3 days were approached to participate. Inclusion criteria were: the patient would be discharged with prescribed medication(s), to their home, or a friend's or relative's and they knew the telephone number they could be contacted on. Excluded patients were those who did not speak or read English or read their medicine labels, were unable to use a telephone, to be discharged to a residential or nursing home, to be discharged without medication, unwilling to be telephoned or take part, and anyone who was sleeping or otherwise engaged when the investigator was on the ward. All patients or carers were asked to consent to their participation in the study. They were asked to identify the most suitable date and/or time of day to be phoned and to have their medicines and discharge letter with them at the time of the call. Consenting patients were telephoned 12 to 28 days after discharge and interviewed using a refined version of the original questionnaire.

Results

Ten patients took part in the exploratory study, eight of whom were interviewed after discharge. These results are not included in the main study. For the main study, 205 patients were approached and 118 consented to take part. 79/118 patients were interviewed, a 67% response rate. Age range—under 12 yrs, 5%; 12–17 years, 5%; 18–65 yrs, 51% and over 65 yrs, 39%. In response to the question, *were you informed at KCH what your medicines were used for?* 46% (36/79) said yes, for all medicines, 29% (23/79) said yes, for some medicines and 20% (16/79) said no, not for any medicines. 5% (4/79) were not sure. 38% (30/79) of patients were told what to do about further supplies. 52% (50/79) were given verbal information just before discharge, 22% (11 patients, 14% of all interviewees) of whom said the information came from a pharmacist. 24% (19/79) of patients were given contact information for further questions and queries, the largest source of this information being nurses (10/19, 53%). 21% (4 patients or 5% of all interviewees) obtained this information from a pharmacist. 15% were not sure if they had been given contact details (Table 1, Fig. 1).

1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent

Scores of 'very good' or 'excellent' were given by 63% of patients who received information on reasons for medicines, 73% for side effects, 90% for interactions and 73% for written information. Fifty seven patients were asked to rate their overall satisfaction with information provided about their medicines. 7% were very unsatisfied or unsatisfied and 66% were very satisfied or satisfied. The remainder had no opinion.

Table 1 Responses to other questions about the type of information provided

	Yes	No	Cannot remember/not sure
Information provided on any side effects	24%	73%	1%
Information provided on any interactions	13%	87%	0
Information provided on any precautions	4%	75%	1%
Written medicines information provided	76%	18%	6%

PW8

Pilot of a ward discharge medication labelling service

A. Brown, N. Patel, R. Onatade

Table 1 Outline descriptions of pharmacist reviews

Level	Source of information	Notes
Level 1 Prescription review	Prescription chart only	<ul style="list-style-type: none"> The prescription is reasonable and unambiguous The product to be supplied is available and of appropriate quality.
Level 2 Treatment review	Prescription chart + Medical record + Brief consultation with patient	<p>The pharmacist should also consider:</p> <ul style="list-style-type: none"> the reason for admission, common patho-physiological factors that may alter response to drug therapy, response to recent previous drug treatment contraindications.
Level 3 Clinical medication review	Level 2 information + A concordant consultation with the patient	The medicines should not be examined in isolation but considered in the context of the patient's condition and the way they live their lives

Table 2 Survey of 25 patients in two specialties

	Specialty		
	Acute elderly	Medicine	
No. (%) who had a Level 2 on first weekday?	21 (84%)	20 (80%)	n/s
Median No. of Level 1 reviews in the first 7 days (Range)	2 (1–4)	2 (1–4)	n/s
Median No. of Level 2 reviews in the first 7 days (Range)	1 (0–3)	2 (1–4)	Mann Whitney $P < 0.05$

Discussion

This development has clearly defined the pharmacist's responsibilities when reviewing drug charts and enables pharmacists to document the level of review they have undertaken on every occasion they look at a drug chart. Pharmacists looking at a drug chart can see what level of review has previously been undertaken. The definitions ensure all pharmacists are aware of what is expected on them. The survey reveals better recording of reviews in medical patients than in acute elderly patients. Why do elderly patients have a lower level of service than medical patients?

This work of defining a very basic process within hospital pharmacy will form the basis for training, supervision and audit within our trust.

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P38. Pilot of a ward discharge medication labelling service

A. Brown, N. Patel, R. Onatade

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Introduction

The Healthcare Commission National Patient Survey (2004) identified delays on the day of discharge home from hospital as a key area where standards could be improved [1]. On the cardiology ward at this trust, the turnaround of patients has increased dramatically and most patients now only remain on the ward for 24 h or less. This increased throughput of patients has consequently highlighted the importance of a quick and efficient discharge procedure. From a pharmacy point of view, having discharge medication (TTAs) on the ward early on the morning of discharge can help contribute to an earlier discharge time for patients. Current initiatives in the hospital such as the use of pre-packs on some wards have helped reduce workload at the time of discharge. However, in an earlier study [2], it was established that pre-packs would not work, but labelling on the ward plus dispensing for discharge (DFD) and/or using patients own drugs (PODs) might be a viable alternative. It was decided to trial this approach in order to fully evaluate potential benefits.

Objectives

- To assess the impact of ward labelling of discharge medications on;
 - the length of time taken to complete a TTA
 - the number of TTAs completely finished on the ward
 - the time TTA medication was ready to be given to the patient
 - discharge times
- To assess the practicalities of implementing a ward TTA labelling service

Method

A baseline study was carried out for 4 weeks in June 2007, Monday to Friday. Data collected included speciality, time TTA was given to pharmacy staff, time TTA was ready on the ward and time of discharge. All TTAs were analysed to assess how many could be completed on the ward with the current stock list and which items could have been dispensed for discharge in advance. The main study took place between August and October 2007 (9 weeks, excluding 1 week in September). Changes were made to the ward stock list to ensure that adequate supplies of commonly used discharge medications were available, in suitable pack sizes. A stand-alone labelling system (Episys®) was installed on a PC in a separate room. If TTAs were written before 11.30am they were assessed to see if all the medicines were available on the ward. These were then dispensed and/or labelled on the ward. Times for all stages in the dispensing and labelling process on the ward were recorded. Items that were not on the ward were dispensed from the dispensary. TTAs that were not available before 11.30am were sent to the dispensary.

Results

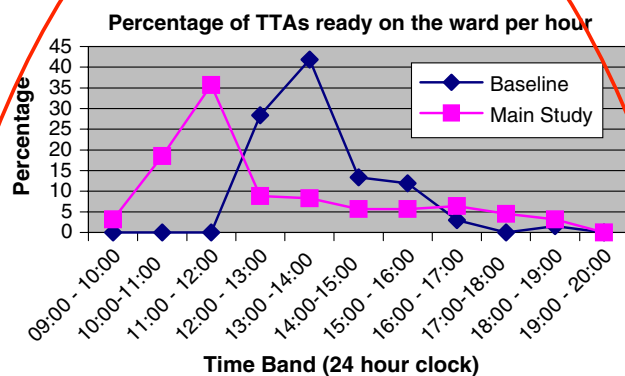
In the baseline study, 95 TTAs were written (average 23/week). 183 TTAs were written in the main study (average 20/week). A total of 62% of TTAs were dispensed at ward level during the main study compared to 21% during the baseline (41% increase)—see Table 1.

Table 1 Comparison of TTA data for baseline and main study

	Baseline	Main study
Completed on the ward, no relabelling or supply from stock	21% (20/ 95)	17% (31/183)
Completed on the ward, incl relabelling & supply from stock	21% (20/ 95)	62% (113/183)
Average length of time taken to complete all TTAs	1:48:59	1:05:12 (45:51 on ward)

Times were recorded for 67/95 (71%) TTAs during the baseline study and 157/183 (86%) during the main study. During the baseline, no prescriptions were ready on the ward before 12 noon, and 70%

(47/67) were ready between 12 and 2 pm. During the main study 57% (90/157) were ready before 12 pm, including 22% (34/157) which were ready before 11am. Graph 1 shows the percentage of TTAs ready in each time-band. The shift of the time-profile curve to the left (earlier times) during the main study is evident.



Graph 1 Percentage of TTAs ready on the ward each hour

The average discharge time during baseline was 14:37:00 and during the main study was 14:56:06. The earlier availability of TTAs on the ward did not appear to make discharge times any earlier.

During the main study, 70 TTAs were not completed on the ward. 53/70 (76%) could have been dispensed at ward level: 39/70 (56%) were not given to pharmacy staff before 11:30 am and 14/70 (20%) were not available for dispensing before 11:30 am (screening delays, staffing, other). 17/70 (24%) could not have been dispensed at ward level (17/183 or 9% of the total no of Rx) because the items required were non-stock. Therefore, 166/183 (91%) of all TTAs could have been dispensed on the ward if staffing restrictions and operational issues were resolved. The service was implemented fairly easily and worked very well. It was noted that increased staffing would be necessary in order to sustain the service and that a labelling database linked to the current pharmacy Ascribe® system would be more user-friendly.

Discussion

A large proportion of cardiac TTAs could be completed at ward level taking a shorter time to complete, partly due to the average reduction in time taken to dispense a TTA of 44 min. TTA dispensing at ward level did not impact significantly on discharge times during this study. However, if the majority of TTAs can be dispensed at ward level this would eliminate one of the potential delays for discharge and allow other areas to be focused on and streamlined. Comparing time taken to complete the TTA was difficult. For the baseline study, the time between the TTA being logged into the dispensary until ready on the ward was compared to the main study where the time labelling started until ready on ward was used. This overestimates the time taken for a TTA to be completed in the dispensary. Anecdotal reports from ward staff following the withdrawal of the service are that it is missed.

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P39. Benefits of clinical pharmacist input to a tuberculosis clinic

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Introduction

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*. The rate in the Yorkshire and Humber region was 13.7 per 100,000 in 2006 [1]. The 2004 Chief Medical Officer's action plan: Stopping Tuberculosis in England [2] identified that adequate control of TB could only be achieved through an appropriately skilled workforce, and in September 2007 prescription charges were abolished for the treatment of tuberculosis from TB clinics [3]. Each year in Leeds, there are approximately 120–160 new cases of active TB, 75–120 treated with chemoprophylaxis for latent TB infection, and 3–5 patients treated for multi-drug resistant TB. Up until November 2007, the TB clinic was held weekly in city centre premises offsite from the hospital, there was no clinical pharmacy presence in the clinic and prescriptions were dispensed by community pharmacies. This had been previously recognised as an area of risk because of the lack of expert pharmacist knowledge, supply problems due to low stock-holdings in community pharmacies, and non-adherence due to inability to afford prescription charges. A business case was therefore written to justify the financial viability of extending the role of the Advanced Clinical Pharmacist and supplying anti-tuberculosis medication from the hospital, when the clinic was relocated into the hospital.

Objectives

To determine the benefits achieved by the inclusion of a clinical pharmacist in the TB clinic.

Method

From 29th November 2007, an Advanced Clinical Pharmacist became involved in the TB clinic, working out of one of the consultation rooms. Patient flow was set up so that all consultations, investigations and supply of medication are undertaken in the same clinic area. If a positive diagnosis of TB is made by the doctor, an initial four week prescription is written and the patient educated about the purpose and risks of treatment. They are then directed to the pharmacist's room who takes a detailed medication and allergy history, clinically reviews the prescription and then supplies it from the clinic using pre-packs of anti-tuberculosis medication. The pharmacist will also reinforce the education provided by the doctor, which is assisted through the use of patient education leaflets published by TB Alert.

A repeat prescription system has been developed that incorporates reviews of sensitivity data and adverse effects; allowing the patient to receive their medication from the pharmacist without delay.

Results

Data are available for the period 29th November 2007–21st February 2008, however none are available prior to the set-up of the new clinic. During the study period 141 patients, including 5 diagnosed with multi-drug resistant TB, were prescribed a total of 334 medicines. Twelve clinically relevant interventions were recorded by the clinic pharmacist (see Table 1), due to errors made by all grades of doctors (3 consultants, 1 associate specialist, 2 Specialist Registrar, 2 Foundation Year 2 doctor) and booking clerks (1 error). Eleven of these interventions could not have been made without the presence of the pharmacist in the clinic working closely with other members of the multi-disciplinary team.

Each week, between one and eight patients on treatment fail to attend the TB clinic. The pharmacist and the specialist TB nurses determine whether the patients can be re-booked in a follow-up clinic within the next two weeks (before running out of medication), or whether a repeat supply of medication needs to be delivered to the patient.

Discussion

The presence of a specialist respiratory pharmacist has brought about many benefits to the Leeds TB clinic. Objective measurements have demonstrated that important interventions can be made that wouldn't otherwise be achieved without access to patient medical records and a close multi-disciplinary team approach to the management of these patients. Participation of the pharmacist within the clinic allows them to resolve any problems or queries directly with the doctor, and also allows the doctors to also discuss any issues with the pharmacist face-

PW9. A study to assess the safety and time-effectiveness of Pharmacy Technician triage on a gynaecology/surgical ward.

Onatade R, Jogia S, Choudhary I

PW10. Identifying criteria for use in assessing the quality of pharmaceutical care:
A modified Delphi study.

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A study to assess the safety and time-effectiveness of Pharmacy Technician triage on a gynaecology/surgical ward

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Standard medicines management technician roles at this large secondary and tertiary care trust include taking drug histories, supplying clinically screened medication, discharge support and patient counselling. All technicians providing this service are at least band 5, and some are band 6 or 7. All undertake a regional competency programme.

All wards at this trust receive at least one full visit every day from a clinical pharmacist. This study was undertaken as the pharmacist and technician on one ward had instituted an informal triage system where the band 6 pharmacist would not necessarily see all the patients after day 1 of admission, sometimes relying on the band 7 technician to identify patients in need of a pharmacist's input. It was therefore decided to test the approach more rigorously for safety and efficiency.

Objectives

- To assess the safety and effectiveness of a pharmacy technician triage model
- To assess whether technician triage saves pharmacist time
- To assess whether or not technician triage takes more pharmacy technician time.

Method

The study was carried out over four weeks in February/March 2008 on weekdays. A pro-forma referral framework was developed using the literature and taking into account the types of patients normally admitted to the ward.

- **Subjects:** SJ, Band 7 Chief Pharmacy Technician, Training and Development and IC, ward pharmacist. At the time of the study, SJ had been qualified for 19 years with 3.5 years ward experience, NVQ internal verifier and Accredited Checking Technician status, plus counselling accreditation for technicians. IC was a three years registered band 6 rotational pharmacist.
- **Setting:** A 24-bed gynaecology/female surgical ward, with occasional medical outliers.
- **Design:** This was a crossover study, with two active and two inactive or standard weeks. During the active weeks, the ward was divided into two halves. IC and SJ worked on different sides. They each provided a full clinical pharmacy service to all their patients. SJ referred patients to IC either by using the framework and/or after identifying potential issues for intervention. A referral was defined as an issue identified according to the framework criteria and an intervention was an issue outside the framework but identified by SJ as needing attention. All new patients were initially referred to the pharmacist. At the end of each visit, they discussed all patients. A control pharmacist went round all beds after IC and SJ and noted referrals and care issues which should be addressed. During the standard weeks, usual roles were undertaken. SJ saw most of the new patients first and IC reviewed all patients every day. At the end of the study, the referrals and interventions were assessed for their potential to be managed or resolved completely by a pharmacy technician.

Results

Table 1 indicates patient numbers and times taken. In the active weeks, the technician made 39 interventions or referrals for 78% (35/45) of patients (excluding referrals because the patients were newly admitted). One patient with a severe eye infection was entirely taken over by the

Table 1. Patient numbers and times taken

	Total patients seen by technician	Total patients seen by pharmacist	Average time taken by technician	Average time taken by pharmacist
Active weeks	45	51	1.5 hrs per day	1.5 hrs per day
Inactive weeks	89 (68 initially seen by technician)		1.5 hrs per day	2 hrs per day

Table 2. Details of referrals and interventions made by the technician during active weeks

	Category of referral/intervention	Number
Referrals (n = 15)	Any new drug prescribed	6/15
	Patients with high blood pressure	3/15
	Patients on anticoagulation	1/15
	Antibiotic policy deviations	1/15
	Drugs requiring therapeutic drug monitoring	1/15
	Inaccurate drug history	3/15
Interventions (n = 24)	Illegal/unsigned/incomplete prescription	2/24
	Choice of drug	3/24
	Need for drug	10/24
	Dose of drug	2/24
	Frequency/timing of drug	5/24
	Duration of therapy	2/24

pharmacist. 26/35 patients were new to the ward, and nine patients had been on the ward the week previous. Table 2 gives details of referrals and interventions. All patients who exceeded the usual length of stay of three or four days eventually had interventions.

During the active weeks, the control pharmacist noted two potential interventions on SJ's half of the ward, neither included in the referral framework, which had not been previously identified. One was potentially harmful ((patient over 75, prescribed a regular NSAID, reason unclear). 80% (12/15) referrals and 75% (18/24) interventions could potentially have been dealt with by a trained technician without checking with a pharmacist first.

Discussion

Other categories in the referral framework, but not used, were

- Illegible scripts
- Patients on oral contraception and HRT
- Diabetic patients and patients with renal failure or markers for possible renal failure
- Patients on IVs potentially inappropriately and patients with syringe drivers
- Long stay patients (> 7 days)

Technician triage using a referral framework appeared to be time-neutral, generally safe and workable in this setting. SJs experience and familiarity with the ward and the uncomplicated nature of the patients was an important factor in the success of the triage model. However one potentially harmful issue was missed. The framework should include defined high risk drugs and situations. Blanket referrals of all new patients (if on standard protocolised treatment), those needing sample blood pressure monitoring and new orders for laxatives and analgesics are not essential. Patients with a longer than average length of stay should always be referred, even if they have no change in medication. Formal clinical training is necessary for optimum input. The framework should be customised for different specialties. Having a band 7 technician performing a service which a band 6 pharmacist can undertake may not be cost effective and the model needs more rigorous testing with less experienced technicians. However it may be appropriate to use a more experienced technician in organisations with a shortage of junior pharmacists. This service model may also be useful for technician development, recruitment and retention in any pharmacy department.

4 Identification of causes of medication error at points around discharge from hospital in Ireland

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Medication error is common on discharge from hospital in Ireland and has the potential to cause patient harm.¹ Deficits in the integration of care between hospital and community settings compromise patient safety and the appropriate use of medication across healthcare sectors.² It is important to understand the human factors causes of medication errors and the organisational safety culture to develop strategies to improve safety.³

Objectives

Identify the causes of medication error at points around discharge from hospital in Ireland by undertaking a stakeholder analysis with the key informants involved in the medication use process (MUP) across the primary secondary care interface.

Methods

The research design was qualitative stakeholder analysis comprising postal surveys, focus groups and face-to-face interviews. The opinions of primary care practitioners concerning medication management on discharge were gathered by means of semi-structured postal surveys with a convenience sample of general practitioners (GPs) and community pharmacists (CPs) and focus groups with GPs practising in the vicinity of the study hospital. Insights into the service delivered in hospital were obtained using face-to-face interviews with a purposive sample of non consultant hospital doctors (NCHDs) and clinical pharmacists. Qualitative data were transcribed, imported into QSR NVivo8 and analysed using the framework approach. Reason's model of accident causation, adapted for use in healthcare settings, was employed to identify error vulnerabilities and attributes of the safety culture.^{4,5} The opinion of the local Ethics Committee was that a formal submission was not required.

Results

There was a response rate of 48% for CPs (n = 90) and 34% (n = 94) for GPs and three focus groups were undertaken with further GPs. Interviews were conducted with 13 NCHDs from the study hospital and 14 clinical pharmacists from seven acute hospitals in Ireland. Error vulnerabilities and attributes of the safety culture were identified.

Individual factors included incompatible goals between the NCHDs' priorities for acute patient care and medication management; perceptions of the consultant's expectations to minimise length of stay and achieve discharge targets; wellbeing of the clinician; a propensity to copy senior colleagues' behaviour and an authority to violate or disregard input from non-medical colleagues. Team factors included deficits in communication and documentation; lack of clarity concerning roles and functions; problems with supervision and responsibility; lack of multidisciplinary engagement and partnership. Task factors included lack of defined standards of practice resulting in heterogeneity in the approaches to the MUP; perceived lack of complexity of prescribing and transcribing tasks; lack of intrinsic meaning in documenting or communicating medication details; absence of an independent checking system. Work environment factors included high workload; frequent distractions; lack of time for error detection and correction; deficiencies in the tools of the trade, for example the layout of the discharge summary; difficulty accessing the preadmission medication list or absence of a system to communicate with primary care; perceived requirement to prescribe for unfamiliar patients. Organisational factors included inadequate provision of training and assessment of

competence; incompatible goals between meeting discharge targets and planning discharge; lack of definition and deployment of the requisite skill mix to undertake medication management tasks; failure to recognise and act on error vulnerability signals (housekeeping). Institutional factors included the lack of a national strategy for medication management or clinical pharmacy services and the absence of an accreditation model or standards for medication management.

Discussion

These findings indicated the need for professional leadership to steward culture change and to develop and implement a national medication management strategy, which would improve allocation of roles, functions and lines of responsibility and accountability. Prioritisation and promotion of medication safety by hospital management and the Health Services Executive would encourage true team work and partnership. Further steps mandated by the findings include: implement medication reconciliation at points around transfer of care; establish balance in performance monitoring between productive and protective outcome measures by assessing the frequency of medication reconciliation at points around transfer; use clinical audit and provide feedback to clinicians and management; review undergraduate and workplace education and training, assess competence. These steps should engender a generative safety culture by facilitating understanding of the benefits of changed behaviour. The process changes indicated by the findings include: revise the layout of the discharge summary; minimise transcription in the MUP; establish a functioning and accessible mode of communication between the hospital and primary care.

This study was the first qualitative assessment of the causes of medication errors at points around discharge from hospital in Ireland, and assessment from the perspectives of primary and secondary care practitioners was novel. The causes of error identified were consistent with previous findings in hospitals in the UK and Australia.^{6, 7} The findings informed the development of a framework to advance the safety culture and to facilitate appropriate medication use at points around discharge. Future work should focus on implementation and evaluation of this evidence based framework in Ireland.

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5 Identifying criteria for use in assessing the quality of pharmaceutical care: A modified Delphi study

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Measuring quality is high on the NHS agenda. The quality of pharmaceutical care provided to patients should also be subject to assessment. Assessing the appropriateness of prescribing is only one

aspect. Experienced clinical pharmacists use their knowledge and expertise to implicitly assess of the quality of care provided to individual patients.

This study aimed to produce explicit criteria as a tool for quality improvement of pharmaceutical care.

Objectives

- To develop a list of criteria that can be used to assess the quality of pharmaceutical care provided to individual patients in an acute inpatient setting.
- To gain agreement on the relevance and objectivity of the criteria

Method

Ethics approval was not deemed necessary. The study was conducted in three rounds by email between March and June 2008. Preliminary themes and criteria (subthemes) were produced through literature review and discussions with senior clinical pharmacists. Participants were recruited via UKCPA message boards and the local clinical pharmacy network. Two panels were created.

- **Round 0:** The first panel commented on and rated the initial criteria as “important”, “unimportant” or “unsure” as to their usefulness for the assessment of the quality of pharmaceutical care. They also suggested new themes and criteria. Criteria which were considered important or uncertain by at least 50% of respondents were retained; all which were considered not important were removed. The results were used to construct a 2nd questionnaire and sent to the second panel.
- **Round 1:** Panellists rated each theme for relevance and individual criteria for relevance and objectivity on a seven point Likert scale. They also proposed new criteria. The RAND/UCLA method was used to determine numbers needed to achieve agreement. Median ratings of 1–2 = irrelevant or subjective, 3–5 = equivocal, and 6–7 = relevant or objective. Themes and criteria achieving agreement for irrelevance were discarded. Those with disagreement, those in the equivocal range and all new criteria were resent to responding panellists for round 2. Relevant criteria and themes achieving agreement were retained and not resent.
- **Round 2:** For each theme/criterion resent, panellists were told their individual ratings, all group comments, the group median and the range. Panellists were asked to review and consider amending their ratings if any remained more than one point away from the median. The results of round 2 were used to construct the final list.

Results

- **Round 0:** 13 themes and 47 criteria were sent to panellists. 48% (14/29) questionnaires were returned. One criterion rated as important by only 33% of respondents was removed. Four new themes and 28 new criteria were proposed.
- **Rounds 1 and 2:** 17 themes and 74 criteria were sent in round 1. Response rate was 57% (20/35). 1/20 was received too late for the results to be used. 14 new criteria were suggested and included in round 2. Response rate to round 2 was 70% (14/20).

Table 1 shows the top rated criteria.

Other relevant themes were transfer of information at discharge, failure to receive medication and response to therapy. Other relevant criteria were response to therapy, whether drug histories are taken and documented, and whether general housekeeping issues (e.g. are drug charts signed by pharmacists), are completed correctly.

Discussion

The opinions of clinical pharmacists from across the UK were solicited to produce a list of the most relevant, objective criteria for use in assessing the quality of pharmaceutical care provided to individual patients.

These generic criteria can also be used to identify gaps in care as well as to aid training and prioritisation. Poor documentation may hinder the

Table 1. Criteria with median relevance ratings of 6–7 AND median objectivity ratings of 5–7

If you were assessing the quality of pharmaceutical care for an individual patient using case/medical notes, how relevant would it be to assess...	Objectivity rating
<i>Drugs with a narrow therapeutic index</i>	
The dose of drugs with a narrow therapeutic index	6
If the dose was adjusted appropriately	5
If appropriate action was taken in response to significant drug/disease/food interactions	5
If any doses had been missed	7
<i>Antibiotic use</i>	
If the choice of antibiotic/s was appropriate	6
If the antibiotic dose was appropriate	5
If the duration of therapy was appropriate	5
Adherence to local restricted policies	6
If IV, whether the IV route was appropriate	5
If IV, if it was changed to oral as soon as possible	5
<i>Anticoagulation drugs</i>	
If the dose was appropriate to begin with	6
If there were any significant drug/disease/food interactions with the anticoagulant	5
If continuity of care was ensured on or before discharge	5
<i>Available laboratory investigation results</i>	
Whether the lab data is outside expected limits	6
Whether appropriate action was taken with regards to the laboratory data	5
If there was proactive (not just reactive) input from a pharmacist	5
<i>For all drugs, side effects and ADRs suffered</i>	
If an allergy was detected, whether this was documented clearly	7
<i>For the presence of any contraindicated drugs</i>	
If the prescription or administration of the contraindicated drug was avoidable	5
If the patient suffered any adverse consequences arising from being prescribed and/or administered a contraindicated drug	5
In the event of adverse consequences, if subsequent patient management was appropriate	5
Whether a contraindicated drug was stopped or an overriding principle recorded	5
<i>The presence of significant drug interactions</i>	
Whether appropriate action was taken after a drug interaction was identified	5
If there were any adverse consequences to the patient from the drug interaction	5
If there were adverse consequences from the drug interaction, was subsequent patient management appropriate	5
PREVENTATIVE MEDICATION – If preventative medication was prescribed as necessary	5
PATIENT COUNSELLING – If the patient counselling was documented	6.5

utility of some criteria. The criteria will be tested for feasibility in practice.

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6 The selection, modification and reliability testing of a tool for rating the significance of pharmacists' clinical contributions


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Winner of Hameln oral presentation prize. See pS3.

King's College Hospital NHS Foundation Trust

The Identification of Criteria for use in Assessing the Quality of Pharmaceutical Care:
A modified Delphi Study

King's 

Raliat Onatade and Alia Zuhair

Why assess the quality of pharmaceutical care?

- Quality of care top of the NHS agenda
- Measuring the quality of medical care is a well-documented process
- Indicators exist for levels of care for specific conditions (e.g. use of beta-blockers post-MI, monitoring of HbA1C in diabetes)
- Little work has gone into assessing the overall pharmaceutical care of patients
- Experienced clinical pharmacists assess care implicitly
- Explicit criteria should be used for consistency

The Delphi Method

- Named after the famous oracle in Ancient Greece
- Used commonly within the health and social sciences
- A structured process featuring a series of questionnaire rounds to obtain the opinions of experts in a systematic manner
- Aim is to achieve consensus of opinion, judgement or choice
- Particularly useful when there is little knowledge or uncertainty surrounding the area being investigated

Features of the Delphi Method

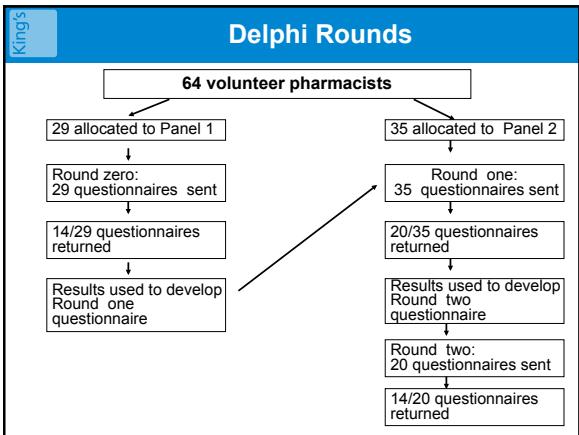
- Physical presence of participants not necessary
- Anonymity
- Controlled feedback: results of rounds are analyzed and summarised results fed back to participants
- Opportunity for participants to revise their opinion in light of the results from others
- Iteration: process continues until consensus or a pre-defined number of rounds is reached
- Everyone 'modifies' the original procedure

Agreement and Disagreement

- Acceptable level of consensus should be decided before responses are analysed
- What is acceptable – 51%, 70%, 80%, 100%?
- Consideration must be given to what to do if some responses are completely at odds with the majority

Method

- Conducted in 3 rounds by email between March and June 2008
- Self-selected expert participants were recruited via UKCPA message boards and the local clinical pharmacy network
- Two panels
- Panel 1 participated in round zero (Baseline)
- Panel 2 took part in rounds one and two



Pharmaceutical care: *Our definition*

Care given by any healthcare staff relating to medicines use. Assumes that the pharmacist is responsible for ensuring that the care needed is actually provided, and that it is appropriate and safe for the patient

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Round zero

13 themes + 47 criteria = 60 items

↓

Items considered important or unsure by 50% or more of panellists retained.

New items proposed

- 25 items rated important by all, including the themes
 - patient counselling
 - inappropriate drugs or doses
 - preventative medication
 - drug interactions
 - side effects and ADRs suffered
 - anticoagulant drugs
 - antibiotic use
 - drugs with a narrow therapeutic index
- Theme 'fluid requirements and fluid therapy' rated either unimportant or unsure by all respondents
- Criterion 'whether there was proactive (not just reactive) input from a pharmacist regarding blood sugar levels' discarded

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Round zero questionnaire

	Important	Not Sure	Not important	Comments/questions/justifications/clarifications/suggestions/additions/ ideas
If you were assessing the quality of pharmaceutical care for an individual patient using case/medical notes, how important would it be to consider...				
1...drugs with a narrow therapeutic index?				
If you think drugs with a narrow therapeutic index are not important pls comment and/or go to QUESTION 2				
1a...the dose of drugs with a narrow therapeutic index?				

← Overarching theme

← Criterion/ sub-theme

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Round one

34 items added from round zero (four themes, 30 criteria).

Total 91 items (17 themes, 74 criteria) sent

↓

- Panellists asked to rate themes (for relevance) and criteria (for relevance and objectivity), each on a 7 point Likert scale
- Panellists also asked to propose new criteria

- Objectivity = 'the ability to make a valid assessment of that item based solely on the information you would expect to find in a patient's case notes (paper and electronic)'
- Clarified that intended use was for the assessment of pharmaceutical care not for assessing individual pharmacist's performance

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Round one questionnaire

	Ratings							Comments/questions/justifications/clarifications/ suggestions/additions/ ideas	
	Relevance: 1 = 1 = very irrelevant, 7 = very relevant. Please mark 4 if unsure								
	Objectivity: 1 = 1 = very subjective, 7 = very objective. Please mark 4 if unsure								
2...antibiotic use?	Relevance	1	2	3	4	5	6	7	
2a...if the choice of antibiotic/s was appropriate?	Relevance	1	2	3	4	5	6	7	
	Objectivity	1	2	3	4	5	6	7	
2b...if the antibiotic dose was appropriate?	Relevance	1	2	3	4	5	6	7	
	Objectivity	1	2	3	4	5	6	7	

1-2 = irrelevant or subjective
 3-5 = equivocal
 6-7 = relevant or objective

Median ratings calculated for each item
 Disagreement - six or more panellists rating at the opposite end of category containing the median¹
 Agreement - less than five panellists rating the item outside the category containing the median¹

¹ Fitch, Bernstein et al. 2001. The RAND/UCLA Appropriateness Method User's Manual

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Round one

100% said it was highly relevant to assess:

- whether appropriate action was taken after a drug interaction was identified
- for the presence of any contraindicated drugs
- if the patient suffered any adverse consequences arising from being prescribed and/or administered a contraindicated drug
- whether appropriate action was taken in the event of a contraindicated drug being prescribed and/or administered
- If a prescribed anticoagulant was appropriate with regards to age/weight/indication/concurrent use of other drugs/liver or renal dysfunction
- if continuity of care for the anticoagulant was ensured on or before discharge
- if appropriate monitoring for a narrow TI drug was carried out

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Methods – round two

- Questionnaires resent to responders to round one
- Items where the panel disagreed, equivocal items (neither disagreement or consensus) and new items from round 1 were resent
- Panellists told range, median, all comments and their individual rating for each item
- Asked to review their ratings for each item - if within one point of the median, they did not have to change it,
- If rating remained more than one point away from the median, consider giving a reason or clarification

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Most relevant and objective items

- Whether a drug history was taken and documented
- If an allergy was detected, whether this was documented clearly
- Whether general housekeeping issues (e.g. are drug charts signed by pharmacists), were completed correctly
- The dose of drugs with a NTI
- If any doses of a NTI drug had been missed
- If the choice of antibiotic/s was appropriate
- If the antibiotic dose was appropriate
- If the dose of anticoagulant was initially appropriate
- Whether lab data was outside expected limits
- Side effects and ADRs suffered
- The presence of any contraindicated drugs
- The presence of significant drug interactions
- Preventative medication (as opposed to acute treatment)
- If patient counselling was documented
- Transfer of information at discharge

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Discussion

- Expert clinical pharmacists' opinions were harnessed
- Mirrors existing work using expert medical and nursing opinions
- Highly relevant to clinical pharmacy practice
- Participants were drawn from all over the UK
- Allowing longer for replies may have improved the response rate
- The results have many potential applications outside the primary purpose
- Items now need to be validated to ensure their feasibility of measurement

Conclusion

- **Criteria on which to base explicit assessments of the quality of pharmaceutical care have been identified**
- **Future work could include soliciting opinions from patients and other healthcare professionals.**
- **Work has now started on feasibility testing selected criteria**

Identifying criteria for use in assessing the quality of pharmaceutical care: A modified Delphi study

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Introduction

Ensuring quality of care is a priority for the NHS, therefore the quality of pharmaceutical care provided should also be subject to assessment. Experienced clinical pharmacists use their knowledge and expertise to implicitly assess the quality of care provided to individual patients. There are currently no explicit UK criteria on which to base judgements. This study was undertaken to produce criteria for assessing the quality of pharmaceutical care provided to in-patients in an acute secondary care setting.

Objectives

- To use the Delphi method of gaining consensus to develop a list of criteria that can be used to assess the quality of pharmaceutical care provided to individual patients in an acute inpatient setting
- To gain agreement on the relevance and objectivity of the criteria

Delphi Process

Preliminary themes and criteria (sub-themes) were produced through literature review and discussions with senior clinical pharmacists. The Delphi study was conducted in 3 rounds by email between March and June 2008. 64 volunteer participants were recruited via UKCPA message boards and the local clinical pharmacy network and divided into 2 panels.

Panel 1 – 29 pharmacists – round zero
 Panel 2 – 35 pharmacists – rounds one & two

13 themes and 47 criteria sent to Panel 1 for round zero
 Panel rated the items as 'important', 'unimportant' or 'unsure' as to their usefulness
 New items suggested

48% response rate
 All criteria which were considered important or unsure by a minimum of 50% of the panel were retained
 'Whether there was proactive (not just reactive) input from a pharmacist on blood sugar levels' was rated as important by only 33% of respondents and therefore removed

Results of round zero used to develop round one questionnaire

17 themes and 74 criteria sent to Panel 2

Panelists rated themes (for relevance) and individual criteria (for relevance and objectivity), each on a 7 point Likert scale
 New items proposed.
 1-2 = irrelevant or subjectivity, 3-5 = equivocal, and 6-7 = relevant or objective

Disagreement - six or more panelists rating at the opposite end of category containing the median
 Agreement - less than five panelists rating the item outside the category containing the median

57% (20/35) response rate
 Irrelevant items without disagreement were discarded
 Items with disagreement, those in the equivocal range and all new criteria, were sent to responding panelists for round 2
 Relevant criteria and themes, without disagreement, were retained and not resent

Results of round one used to develop round two questionnaire

20 questionnaires sent to respondents from round one
 For each item resent, panelists were told their individual ratings, all group comments, the group median and the range
 Panelists were asked to review their ratings, taking into consideration the comments and group median

70% (14/20) response rate
 The results of round two were used to construct the final list of relevant and objective themes and criteria

Figure 1. Excerpt from round zero questionnaire theme

Relevance	Objectivity	Comments/Questions/Justifications/clarifications/ suggestions/additions/ ideas
1 2 3 4 5 6 7	1 2 3 4 5 6 7	
1 2 3 4 5 6 7	1 2 3 4 5 6 7	
1 2 3 4 5 6 7	1 2 3 4 5 6 7	
1 2 3 4 5 6 7	1 2 3 4 5 6 7	

Box 1. Most relevant and objective items criteria

- If an allergy was detected, whether this was documented clearly
- Whether a drug history was taken and documented
- Whether general housekeeping issues (e.g. are drug charts signed by pharmacists), were completed correctly
- The dose of drugs with a narrow therapeutic index
- If any doses of a NTI drug had been missed
- If the choice of antibiotic/s was appropriate
- If the antibiotic dose was appropriate
- If the dose of anticoagulant was initially appropriate
- Whether lab data was outside expected limits
- Side effects and ADRs suffered
- The presence of any contraindicated drugs
- The presence of significant drug interactions
- Preventative medication (as opposed to acute treatment)
- If patient counselling was documented
- Transfer of information at discharge

Discussion and Conclusions

- This is the first generic list of criteria on which to base an assessment of the quality of pharmaceutical care for individual patients in an acute care setting in the UK.
- Many studies have used expert medical and nursing opinions to derive indicators for assessing quality. This study has shown that it is possible to use expert clinical pharmacists' opinions to develop criteria for assessing pharmaceutical care. The large response to the request for panelists is an indication of the relevance of this work to clinical pharmacy practice.
- The results have many potential applications outside the primary purpose.
- Many respondents commented that although criteria were relevant, poor documentation meant that many would not be able to be assessed.
- As Delphi studies only provide face validity, the criteria need to be further validated to ensure their utility and feasibility in practice. The next phase of this study has now started, with selected criteria being tested for feasibility.

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PW11 – The Quality Series

PW11a

Quality indicators are important measurement tools
for pharmacy

R Onatade

PW11b

Auditing medication history-taking can help
demonstrate improved pharmacy services

Reena Mehta and Raliat Onatade

PW11c

Improving the patients' discharge experience is an
important pharmacy goal

Raliat Onatade and Reena Mehta

Quality indicators are important measurement tools for pharmacy

This is the first article in a new series that looks at quality assessment in clinical pharmacy services. Here, Raliat Onatade describes how quality in health care can be measured and how quality indicators can be developed.

Assuring the quality of health care services is a basic concept underlying the provision of services, and has become increasingly important in the NHS. It is reasonable to expect that the quality of clinical pharmacy services should also be assessed. Many organisations have set standards for clinical pharmacy practice, but, indicators allow the quality of care and services to be measured. At King's College Hospital, we have developed a set of quality indicators for our clinical pharmacy service. Adapted from the literature to suit our local priorities and circumstances, these indicators provide a means to not only measure aspects of the service, but also demonstrate

and monitor improvements, by way of a programme of repeated testing, feedback, and targeted service developments to drive improvement. This article provides an overview of the quality assessment of health care, clinical pharmacy and pharmaceutical care, and describes how this was applied to the development of our quality indicators.

What is quality and how can it be measured?

Quality of care is usually defined as 'the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge'.¹

However, there are different views about what constitutes quality depending on one's roles and responsibilities within the system.² Indicators are explicitly defined and measurable items, which act as building blocks in the assessment of care.³

It is well known that there are gaps between recommended practice or care and that which is actually given or received,¹ but the multi-dimensional and multi-professional nature of health care makes it notoriously difficult to assess. Despite this, quality indicators now abound, including those that are specific to

diseases, medication or patient-groups. This reflects the huge interest in this topic.

There are several different ways of classifying quality indicators, but this article will focus on the most common paradigm of structure, process and outcome.^{3,4} Patient outcomes are frequently thought of as the best measures of care quality.³ What interests most people is whether care has improved the patient's health, and a good outcome (however it is defined) is the most desirable endpoint of an episode of care. Also, the desired (or undesirable) outcome is often easily defined, whether it is recovery, survival, symptom improvement, disability or disease.^{3,5,6,7} Outcomes are also of greater interest to patients and can cover many different aspects of care. For an outcome to be a valid measure of quality, it must be closely related to processes of care that can be manipulated to affect the outcome. Nevertheless, outcomes as a measure of quality have their limitations (Box 1).

Considering clinical pharmacy, one obvious problem with using patient outcomes as a measure of quality is that it may be impossible to single out the effect that a pharmacist's input had on the outcome.⁹ Changes in patient knowledge, lifestyle changes and satisfaction with care and services are considered outcomes, and these are often measured by providers of pharmacy services. Response to drug therapy (such as INR, the presence or absence of bleeding episodes during treatment with warfarin, blood pressure control, blood glucose measurements) may also be easily measurable. Where, for example, a pharmacist-led anticoagulation clinic is part of a clinical pharmacy service, there will be

Box 1. Features of outcome measures as indicators of care quality^{1,4,5,6,7,8}

Advantages

- Outcomes are intrinsically important
- Outcome measurements will reflect those aspects of care that are not easily measured
- Outcome data is often routinely collected and so may be easily available

Limitations

- Outcome measures are not a direct measure of the quality of health care provided
- Variations in outcome may be due to several factors, such as:
 - patient type
 - differences in data collection
 - chance
 - quality of care
- Outcomes may be difficult to measure and interpret
- It is not always obvious what needs to be done to improve outcomes
- Often, outcomes occur a long time after the care has been given
- A poor outcome is not necessarily indicative of poor care and a good outcome does not necessarily reflect good care
- Outcome measures may need large patient numbers to be valid
- For an outcome measure to be valid, one must be able to demonstrate that the outcome being measured can be affected by different processes or organisational features

The place of outcome indicators in quality assessment

- Outcomes are said to be the ultimate validators of the effectiveness and quality of care
- In general, outcome indicators are most relevant if a broad perspective is required (such as, mortality and morbidity rates)

Quality assessment

Box 2. Features of process indicators^{1,4,5,6,7,8}

Advantages

- Process indicators avoid confounding factors by looking at whether particular activities were undertaken
- Process indicators directly measure the care that was provided
- Process indicators are easier to interpret
- Process measures are more sensitive than outcome measures to differences in the quality of care

Limitations

- For a process indicator to be valid, it must previously have been shown to produce a better outcome
- Process indicators must be closely related to an outcome people care about

Process indicators are used when

- Quality improvement is the goal of the measurement process
- An explanation is sought for why specific providers or practitioners achieve particular outcomes
- Short time frames are necessary
- Tools to adjust for patient factors are lacking
- The outcome lacks a valid or reliable measurement method
- Outcome measurement is not economically or logistically possible
- The outcome of interest is far removed from the process
- The process measures are closely associated with outcomes

outcome measures that can be used to assess the quality of such a service and/or the pharmaceutical care provided. Because clinical pharmacy services aim to ensure rational, safe, cost-effective use of medicines, economic outcomes (such as cost savings and reductions in drug expenditure) may also be valid measures of the quality of a service. However, one must also consider whether the service can influence the economic outcome sufficiently.

Another approach to quality measurement is assessing the process of care. Process indicators measure the activities and tasks undertaken in giving care and how well they were carried out.^{3,6} Examples are the physical examination, performance of diagnostic tests, prescribing, the surgical procedure undertaken.^{3,10} Prescribing and medicines-use indicators are very common process indicators used to assess the quality of care. Clinical pharmacy standards by definition are based on processes, such as how to endorse a chart, monitoring drug and biochemistry levels and documenting contributions. Monitoring gentamicin therapy (checking levels, adjusting doses) is therefore a process. The patient's response to treatment with gentamicin (improvement in infection markers, recovery, development of adverse effects) are outcomes. Because valid process indicators must have a demonstrable link to a

quality of clinical pharmacy services, process indicators are most widely used. A process indicator can measure whether or not a patient with atrial fibrillation (AF) receives appropriate anticoagulation, whereas rates of stroke in such patients may be difficult to collect and interpret.⁶ Failures to provide appropriate care or failure to provide care without error can result in considerable harm to patients. For this reason process indicators are critical measures of quality (see Box 2).¹

Apart from what happened to, or what was done for, the patient, a third accepted way of assessing care is to look at the capabilities of the health system, organisation or unit providing care. Structural indicators describe such things as facilities, equipment, staffing, resources, training, presence of policies and guidelines.^{1,5,6} The assessment of structure is a judgement on whether care is being provided under conditions that are either conducive or detrimental to the provision of good care. Structural indicators that predict variations in processes or outcomes of care are of most use.⁶ In hospital pharmacy practice, examples of structural indicators may include the integration of specialist pharmacists into multi-disciplinary teams, provision of an adverse drug reaction (ADR) monitoring service, availability of protocols or guidelines and number of

good outcome, one might question the validity of measuring, for example, the achievement of endorsement standards such as writing 'with or after food' on prescriptions for NSAIDs, since there is no evidence that this makes a difference to the development of NSAID-induced peptic ulceration (an outcome) or indeed, whether such an endorsement influences whether the drug is administered at meal-times (a process).

It is not surprising that in measuring the

pharmacists per 100 beds. Some clinical pharmacy structural indicators have been shown to predict outcomes in improvement. Bond and colleagues showed in American hospitals that clinical pharmacy services (including a pharmacist drug history-taking service, provision of education, participation on ward rounds, ADR management and drug-protocol management) were associated with reduced ADR rates. Increased clinical pharmacy staffing also reduced ADRs.¹¹ In the UK, more recently, Borja-Lopetegui and co-workers found an association between high activity in clinical medicines management, pharmacy staff establishment and lower hospital mortality rates.¹²

Why and how should the quality of clinical pharmacy services be assessed?

Quality should be measured to drive improvements in patient care and outcomes. Standards aim for consistency in practice by ensuring everyone understands what needs to be done and how, and indicators are based on standards of care. Most measures of clinical pharmacy service quality are either structural or process-based. Historically, pharmacists have not measured the outcomes of their service (except perhaps patient satisfaction) because it has been difficult to directly relate our activities to patient outcomes. With our increased involvement in, and responsibility for, direct patient care, it will become much easier and more important to relate our activities (processes) to outcomes. In assessing quality, one should use a combination of all three types of indicators because each element of quality is dependent on the others — certain structures must be available to support appropriate processes of care, which in turn result in specific outcomes.⁸ Using an appropriate mixture of the three may therefore give a better measure of quality (Box 3).⁷

In considering how to assess the quality of our service, the literature was searched for examples of appropriate measures. Although there are several examples of desired and measurable service standards, published work from the UK on quality indicators, which met the criteria detailed above, was lacking. Radley and colleagues in Tayside developed and audited four standard

Box 3. Eight essentials of performance measures or quality indicators¹³

- Use a balanced set of measures
- Make sure you measure what matters to service users and other stakeholders
- Involve staff in determining the measures
- Include both perception measures and performance indicators
- Use a combination of outcome and process measures
- Take account of the cost of measuring performance
- Have clear systems for translating feedback from measures into a strategy for action
- Measurement systems need to be focused on continuous improvement, not a blame culture

statements of service quality.¹⁴ After local discussion with lead clinical pharmacists, we based our performance indicators on the Tayside indicators, but adapted them to suit our priorities. Box 4 shows the original indicators and our modified statements, with an indication of the type of indicator each one represents. Structural indicators were not included, for two reasons – we are continually reviewing and informally benchmarking our staffing levels and services provided, and new policies and procedures are implemented whenever gaps are identified. We therefore considered that formally measuring these aspects would be unlikely to lead to a change in the rate of improvement. Also, making changes to structural indicators are often strategic decisions, which makes them more removed from the day to day work of staff delivering care. It was important that the indicators were relevant to clinical staff and their daily work so they could see how their efforts were making a difference.

Equally, it was important that all aspects of the patient pathway were considered, so the quality statements encompass the full acute patient pathway, from admission through to discharge.

The next step was to take baseline measurements to translate the statements into indicators and to set targets for improvement. Each indicator has now been measured at least twice. We have set up an annual quality improvement programme for measuring and assessing the indicators. Further articles will describe this work for each indicator. Quality indicators should be under continual review to ensure they remain relevant to the service and care provided. Future articles will also discuss our reviews on the feasibility and value of the indicators as quality measures. ✚

Declaration of competing interests

The author declares she has no competing interests.

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Box 4. Quality statements for the clinical pharmacy service at King's College Hospital

Our statements	Indicator type*	Radley et al**	Rationale for change
Each patient will have an accurate medication history within two working days of admission	Process	Each patient will have an accurate medication history	It is important to take drug histories as soon as possible after admission, therefore a reference to timeliness was appropriate
Patients will be discharged with all medication already available on the ward with no additional dispensary input	Process, outcome	Timely and effective discharge planning for each patient is enabled	Waiting for discharge medication is the most common complaint patients have about pharmacy. By ensuring availability of discharge medication waits are minimised. This emphasises patients' and the trust's priorities
There is seamless continuation of prescribed therapy (during inpatient stay) to achieve the desired patient outcome	Process	There is seamless continuation of prescribed therapy to achieve the desired patient outcome	No change
All pharmaceutical care issues have been addressed for each patient	Process, outcome	Prescribed therapy for each patient is assessed and medicines-related care issues are addressed	Focus on pharmaceutical care

*=Indicator type represented by our statement; **Statement by Radley et al¹⁴

Assessing quality is fundamental to pharmacy

In this month's *Pharmacy in Practice* Christine Knott concludes the series on research funding by exploring why research outcomes must be disseminated and how this can be best achieved for different target audiences (p136). Publishing your findings is important even if they are negative. Indeed, the pharmaceutical industry has been accused of publication bias by not submitting for publication the research that gave negative outcomes — and this is potentially a widespread occurrence. For instance, one group of researchers compared FDA data on selective serotonin reuptake inhibitors with published literature.¹ They found that 94% of published trials were positive, whereas the FDA analysis showed that only 51% were positive. Delaying the publication of trial data has also occurred, as found with



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Enhance trial of ezetimibe,² and we have also seen the changing of a primary end point after a study has started.³ Although there may be short-comings in the way some of the pharmaceutical industry has dealt with publishing study results it remains the duty of all individuals who have conducted research to endeavour to present the results to a wider audience. Indeed all studies passed by an ethics committee should be published, or at least submitted for peer review with a view to publication; this includes pharmacy research.

Measuring pharmacy services quality

Assuring the quality of pharmacy services and the person conducting those services are the subjects of two papers this month. Raliat

Onatade, from King's College Hospital, describes how a set of quality indicators for the local pharmacy service were developed (p141). These indicators are used to measure aspects of the service and to demonstrate and monitor improvements by repeat testing. One of the difficulties of measuring outcomes of clinical pharmacy services is that it is not usually possible to single out the effect of the pharmacist's service from other interventions the patient receives. We are therefore often left measuring processes of care such as tasks under-taken and how well they were done.

Measuring the quality of pharmacist prescribers

Ensuring the quality of pharmacist independent prescribing is an important objective for University examiners. Although it is a straightforward process to test knowledge and ability to access information from appropriate sources, assessing pharmacists' ability to perform practical tasks is more problematic. In the article by Barry Strickland-Hodge (p122) one of the methods described to measure prescribing competence is the objective structured clinical examination (OSCE). OSCEs are used to evaluate practical tests such as performing procedures and demonstrating techniques.

It is a great pity that pharmacists conducting medicines use reviews (MURs) are not required to undertake OSCEs. To demonstrate competence to perform MURs all that is required is to pass a test on knowledge, which is often very clinically oriented. The real skill required for an MUR is the ability to consult with patients. Consultation skills for pharmacists running MURs are neither taught nor assessed.

Assessing quality of internet 'pharmacies'

The latest White Paper on community pharmacy again suggests the way forward for pharmacy is the development of clinical services.⁴ This is welcome but is unlikely to

become reality while medicine supply provides the main source of income. Supplying medicines will always be the core function for pharmacy and ensuring safe supply of appropriate medicines is essential. It is a worry, therefore, that there are increasing numbers of counterfeit medicines in circulation and more than 50% of those internet websites selling medicines who conceal their address are estimated by the WHO to be selling counterfeits. In the first of two articles on counterfeit medicines the extent of the problem and systems for reporting counterfeit medicines are introduced (p144). The public are demanding choice in the way they obtain medicines, and internet order and supply are likely to grow. It



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is therefore vital that greater effort needs to be made to inform and educate the public about which sites are likely to be safe and how to recognise a safe website. This important area is likely to become one that pharmacists will need to address sooner rather than later. ✚

Duncan Petty, consultant editor

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Auditing medication history-taking can help demonstrate improved pharmacy services

With an aim to share best practice on quality assessment of clinical pharmacy services, Reena Mehta and Raliat Onatade explain how they audit medication histories as a quality indicator at King's College Hospital.

Introduction

This is the second in a series of articles looking at how the quality of the clinical pharmacy service at King's College Hospital, London is measured and monitored. The first article discussed the measurement of quality in health care and clinical pharmacy and described how our four quality statements were devised.¹ This article will discuss our first standard, and how a target figure was established and the serial audits undertaken. We also describe changes and other actions that we have undertaken to improve the service including the impact of the new NICE/NPSA guidance.²

The first statement is: *'Each patient will have an accurate medication history within two working days of admission'*.

Background

In the first article we mentioned that previously published indicators were adopted as a basis for our quality statements.³ Medication history-taking was adopted as a quality indicator for a variety of reasons, as outlined below.

An accurate medication history at the time of hospital admission is an important part of the initial patient assessment and an important element of medication safety. An incomplete or inaccurate medication history can lead to inappropriate drug therapy during hospitalisation and may affect patient safety.⁴ The Audit Commission's *Spoonful of sugar* report states that in some hospitals in England 30 per cent of patients have incorrect or incomplete medicines

recorded on admission and that reviewing medication needs on admission should be a major focus for pharmacy services.⁵ Several studies have shown that pharmacists can elicit more complete medication histories compared to other health care professionals, and can devote more time to this activity.^{4,6-9} The Department of Health also recommended that clinical pharmacy activities are extended to pharmacists taking patients' medication histories.¹⁰ There has been much published work comparing medication histories taken by pharmacists and physicians¹¹⁻¹⁵ with a consensus that pharmacist-acquired medication histories are more accurate and comprehensive. The recent NICE/NPSA guidance on medicines reconciliation supports our decision to use medication histories as a quality indicator.²

The lapse in time for a medication history to be taken can be crucial because this can uncover reasons for a patient's illness, such as an adverse drug event or non-adherence to drug therapy. Also, medication history errors, which are not detected early enough may result in interrupted or inappropriate drug therapy during and after a hospital stay.

Medication history-taking by pharmacy staff has been audited at our trust four times between 2005 and 2008 as part of the annual clinical services quality programme. The methodology has changed slightly over the years as we learned from previous mistakes, but we have been able to track the impact of service developments and other improvements on our performance.

Audit 1 (Baseline, July 2005)

The aims of the first audit were:

- To establish a baseline figure of attainment.
- To aid in setting a target figure.
- To establish barriers to practice so as to remove them.

This first audit was carried out in two parts. Part one was to assess the percentage of medication histories that were obtained and documented. This took place over one week. All patients admitted to a ward 48-72 hours before the data collection day were identified through the electronic patient record (EPR) system. Each drug chart was checked to see if a pharmacist-obtained medication history was documented. If not the ward pharmacist was contacted to establish whether one had been documented elsewhere, or to explain why he/she had decided not to take a history. It was also noted whether the medication histories were signed and a contact number left. Data were collected from each ward once only over the data collection week. If there were no admissions to a ward during its allocated data collection period every attempt was made to re-visit it on subsequent days.

Excluded units were: rehabilitation (because all patients are transfers from other wards); intensive care (because few medication histories can be obtained); neonatal, antenatal and postnatal areas, and patients who had already been discharged or whose charts could not be located. A total of 37 wards and 808 beds were included.

Quality assessment

The lapse in time for a medication history to be taken can be crucial because this can uncover reasons for a patient's illness, such as an adverse drug event or non-adherence to drug therapy

We subsequently recognised that information about how long after admission medication histories were taken would be valuable. Therefore, a second arm took place on a single day in the following week to assess this. Patients admitted within 72 hours before data collection were identified from the EPR system. Their drug charts were reviewed and a record made of how soon after their admission to the trust a pharmacist-obtained medication history was recorded. For undated histories the time elapsed between date of admission and date of data collection was calculated. For this arm of the study 790 beds were surveyed.

Results

Baseline audit: Part 1

We found that 34/37 wards (715 beds) had eligible patients. The drug charts of 60 patients were seen and 33/60 (55%) had their medication histories recorded by a pharmacist. Of these, 85% were signed, 79% were dated and 33% had a contact number included.

Where medication histories were not documented reasons were sought and these are presented in Box 1. On review, the Clinical Pharmacy Services team concluded that the only justifiable reasons for not taking a medication history were cases

of communication barriers or frequent readmissions — this amounted to three patients in total.

Part 2

The drug charts of 108 patients were seen. Of these 42% of patients had a medication history documented within 48 hours and 61% were dated.

After discussion with our lead specialist clinical pharmacists, taking into account the fact that most medication histories were taken in the first 48 hours, results varied significantly between specialties (range from 0–64%) and the majority of reasons for not recording a medication history were not felt to be justified. The quality statement was translated into the following standard:

For all eligible patients 75% of medication histories should be obtained within 2 working days after admission.

The target for signing, dating and leaving a contact number was set at 100%. Before the next audit, the following actions were undertaken:

- A training package was written explaining how to take medication histories, including what information sources to use and what to document. Training was delivered to all ward-based pharmacy technicians and newly qualified pharmacists during their induction.
- An existing page on the drug chart was re-designed and became a dedicated area for documenting medication histories.

Additionally, as part of an overall strategy, the philosophy and concept of the

Clinical Services Quality Programme and future plans were presented to the whole department. More technicians also took up full-time or part-time ward roles.

Follow-up audits 2 (December 2006), 3 (June 2007) and 4 (June 2008)

In 2006 the methods from the two arms of the baseline audit were combined into one and refined. Subsequent audits used the same method. In 2007, a regular annual June programme of audits began so from that time onwards audits were undertaken in June. All new patients admitted within the previous three working days (72 hours) were identified from the trust's EPR system. Exclusion criteria were the same as for the baseline audit except that level 2 intensive care beds were no longer excluded. Each eligible patient's drug chart was checked to see if a pharmacy-obtained medication history was documented. In January 2008, the NICE/NPSA guidance on medicines reconciliation was released. Therefore, before carrying out the audit in June 2008 staff were informed of the implications of the new guidance. The importance of medicines reconciliation and its prioritisation were re-emphasised. Suggested changes to the medication history section on the drug chart to incorporate the recommendations in the NICE audit tool² were also presented and led to further evolution of the drug chart to that currently used (Box 2).

The following data were collected in all three audits:

- If the medication history was signed and who signed it.
- If the medication history was dated, and if so the date documented.
- If a contact number of the member of staff documenting the medication history was recorded.
- In addition, in 2008, as a result of the NICE/NPSA guidance² the various sources used to obtain the medication histories were also noted.

The findings from all audits undertaken between 2005 and 2008 are summarised together in Table 1. There will have been patients who were documented as not hav-

Box 1. Reasons given for non-documentation of medication histories

- Patient was taking few/no drugs so no medication history required
- Pharmacist was not aware of correct admission date
- Different pharmacist from normal was covering the ward
- Not enough time to document a full medication history
- Pharmacist did not feel patient required a medication history
- Language or other communication difficulties
- Patient has frequent admissions
- Other

Box 2. The currently used drug chart with a dedicated space for documenting medication histories

PATIENT MEDICATION HISTORY

Please check that the DRUG ALLERGY BOX has been completed

*MEDICATION HISTORY (Source e.g GP Name & No.....)
FOR FP10 INFORMATION, PLEASE STATE LAST ISSUE DATE

MEDICINE NAME	DOSE	FREQUENCY	COMMENTS/ FOLLOW UP DISCREPANCIES/ FOLLOW UP NEEDED

// //

OTC/ ALTERNATIVE/COMPLEMENTARY MEDICINE

MEDICINE	DOSE/FREQUENCY	COMMENTS/RATIONALE

Compliance Aids — Is the patient currently using one? Yes/No
Name and number/fax of pharmacy _____
Type of compliance aid if known: _____

Other information/Follow up _____

DATE..... COMPLETED BY AND CONTACT No.....
*Please sign and date any amendments made to the original documented drug history

There has been much published work comparing medication histories taken by pharmacists and physicians with a consensus that pharmacist-acquired medication histories are more accurate and comprehensive.

admission'.¹⁷ However, we decided a two working day target was more realistic for us because we do not provide a full clinical service at weekends. Although studies on medication histories and associated errors are plentiful, information on how soon after admission these histories are taken is not easily available. Our audits thus add to current knowledge by providing information, which other hospitals can benchmark against.

The improvements in results each year show the benefits of undertaking regular audits and making changes in between each audit. Factors that we believe have contributed include the increase in medicines management technicians on the wards, and having a dedicated medication history-taking space on the drug chart (illustrated in Box 2). A streamlined process, accessibility, standardisation and accuracy are other benefits of providing a standard place to document medication histories. Other organisations have also found this to be helpful.¹⁸ Percentages of staff signing,

ing a medication history but at the time of data collection had not yet been in hospital for 48 hours and therefore could potentially have had a history taken and met the target timeframe.

Sources of medication histories

In 2008 the source(s) that had been used to take the medication histories were stated in 94% of medication charts. The stated sources and the number of times each source was used to obtain a medication history are listed in Table 2. A total of 214 sources were recorded and more than one source was used in obtaining 28% of the medication histories.

Discussion

The importance of obtaining medication histories on admission is embedded into our service and we now consistently exceed our target. Having an explicit time-frame for completion helps pharmacy staff prioritise their workload.

Our optimal time-frame, although largely arbitrary, is similar to those found in the literature.^{13,16} Also, standard 23 of the 2003 Department of Health medicines management framework states that 'Patients should have a complete medication history review within 24 hours of

Table 1. Summary of all audit results

	2005 (baseline)	2006	2007	2008
Total no of patients identified	Not recorded	188	263	326
No of patients/drug charts seen (% total)	60*, 108**	165 (88%)	178 (67%)	213 (64.4%)
% who had a MH	55%*, 53%**	84%	89%	82%
% of MHs which were dated	79%*, 61%**	83%	79%	92%
% of MHs which were signed	85%*	83%	78%	92%
% of MHs with a contact number noted	33%*	80%	65%	87%
% of patients with a MH within 24 hours	31%** (60%)	62% (74%)	61% (68%)	70% (85%)
% of patients with a MH within 48 hrs***	42%** (79%)	78% (93%)	81% (91%)	79% (96%)
Significance of any differences in 48 hr results with preceding year (chi-square test)	—	p < 0.001	NS (p > 0.5)	NS (p > 0.5)

MH = Medication History; *Data from part 1 of the baseline audit; **Data from part 2 of the baseline audit; ***48 hours equated to 2 working days. Data in parentheses represent the number of patients with a MH within 24 hours or 48 hours as a percentage of all MHs taken.

ucible, the once-yearly audits are time-consuming and provide only a snapshot of information. We have considered alternative ways of collecting the same data, including changing the frequency of the audits by:

- carrying out the same audit two or three times per year
- auditing a smaller number of randomly chosen charts every month
- auditing one or two specialties every month.

To be able to double-check the accuracy of medication histories the best option would seem to be to audit fewer charts every month. However, at present all the quality indicators data is collected by pharmacy undergraduates undertaking vocational work with us during the month of June. Collecting data every month would involve investing more staff time. Changing to a smaller monthly audit would also mean losing the measures of activity described



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above. Nevertheless, we are considering piloting more frequent data collection.

The future

Medicines reconciliation goes further than medication history-taking by specifying the need to action and communicate any discrepancies between the obtained history and the inpatient prescription.² Therefore, our quality statement, accompanying standard and data collection tools will be amended to reflect the new guidance (see Box 3)

Although there will be workload implications to fully implementing the guidance we already have a culture of obtaining medication histories as soon as possible after admission

and we hope to minimise its impact. This will be monitored. We are currently drafting our medicines reconciliation policy, which will include parts of the training package originally written. Our proposed changes to the documentation will support the new requirements. We have also tried to reflect the guidance audit tool.

To further improve, we need to put strategies in place to obtain information from patients with communication difficulties. This will be helped by linking in with trust initiatives to remove communication barriers. Regular reinforcement of the importance of medicines reconciliation is also needed.

As more trusts move to towards using electronic prescribing systems the innovative use of IT should ensure that medicines reconciliation at the point of admission is more achievable, efficient and useful.^{20,21} One hospital in the US described how using an electronic system improved their ability

An accurate medication history at the time of hospital admission is an important part of the initial patient assessment and an important element of medication safety.

to reconcile medications throughout each patient's stay. Using the system, errors in medicines reconciliation were reduced from 45.8% to 2.4%²² suggesting improvements are indeed achievable. ❖

Declarations of interest

The authors have no interests to declare.

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Improving the patients' discharge experience is an important pharmacy goal

Raliat Onatade and Reena Mehta conclude their series on quality assessment with an article addressing the important issue of the patients' discharge experience. This is well-known to be an area of concern by patients and Raliat and Reena explain how they are trying to improve this and how they measure the quality of this aspect of their service.

Introduction

This is the final article in our series dealing with quality measurement of clinical pharmacy services. The first article gave a general overview of the measurement of quality in health care and detailed how we applied these concepts to measuring the quality of our clinical pharmacy service.¹ Our quality indicators and annual monitoring programme were also introduced. The second article focussed on the first indicator, medication-history taking, and described the results of the serial monitoring undertaken.²

This article discusses our second quality indicator, which deals with the process of providing discharge medication. The desired outcome for both patients and staff is that patients should not wait for their medication once they are ready to leave hospital. The quality statement reads as follows: 'Patients will be discharged with all medication already available on the ward with no additional dispensary input.'

Background

Being made to wait in hospital for longer than necessary can often colour a patient's perception of their entire stay, regardless of the quality of clinical care. Over the past few years, the Government has introduced several policies and targets that have led NHS trusts to focus on the need to minimise delays to discharge. These initiatives include targets for accident and emergency waits before admission or

discharge, *Payment by Results* (the set tariff for a procedure or treatment of a condition means a potential financial loss if a patient's length of stay is above a set sum) and the 'referral to treat' targets.

Although there may be many reasons for a delay in discharge, waiting for medication is the one most commonly cited by patients in the UK. Approximately 61% of patients who have a delay say it was caused by waiting for medicines.³ Most hospital pharmacists will make the point that the major reason that medication is not ready on time for patients is because the discharge prescriptions are not written on time. Nevertheless, the timing of the supply of discharge medication often frustrates patients and staff, so pharmacists must, and do, take on some responsibility in helping to improve this aspect of the patient experience.⁴

The use of patient's own drugs (PODs), dispensing for discharge (DFD, one-stop dispensing), prepacks, ward-based labelling or dispensing of discharge medication and self-administration are all schemes that are used to streamline the supply of medication at discharge.⁵⁻⁹ However, their suitability for a particular ward or speciality-type should be assessed because they are not always appropriate.¹⁰

At King's College Hospital, the use of PODs and DFD are widespread. We have also introduced the use of pre-packed

medication on some wards. Reducing delays by supplying discharge medication direct from the ward is a primary aim of these initiatives. Therefore we agreed that the quality statement would refer to ensuring discharge medicines are already on the ward to supply against a prescription, once written. We considered that this would be a good measure of the quality of our service, and would have the added advantage of allowing us to assess the benefits of the different schemes. The baseline audit was carried out in 2005, with repeated measurements in 2007 and 2008 as part of our quality annual monitoring programme.

Methods

Representative wards from all the specialties were included, except rehabilitation and critical care. A set of wards was selected each week and data were collected from each for five consecutive days (weekends were excluded). Every day a list of the previous day's discharges was retrieved from the electronic patient record system (EPR), and the paper copies of the discharge prescriptions were retrieved from the dispensary. The endorsements (i.e. instructions as to whether an individual drug needed to be dispensed, and if not, if this was because it was a POD/DFD/prepack etc) on the paper copies were used to compile the required information. As far as possible, missing information was found by checking with ward staff, in patients' medical records, with the ward pharmacist, or on the pharmacy labelling system.

Quality assessment

Because checking and assembling medication on the ward takes more pharmacists' or technicians' time than simply sending a prescription to the dispensary, increases in activity can also affect our capacity to provide the more individualised service.

For consistency, the core wards have remained the same each year, but more wards have been added for internal reasons or to improve validity. In 2006, the practice of asking and documenting if a patient had a supply of medicines at home (Patient's Own Supply at Home, POSH), and therefore did not need any dispensed at discharge was formally introduced.

Results and Discussion

The results of the audits are presented in Table 1. The 2005 results gave us good baseline data (17% of prescriptions fully completed on the ward), but it was impossible to tell by how much this could be improved. A literature search did not help in producing information that we could benchmark against. One published audit showed that using PODs and DFD meant that 80% of discharge items were supplied from the ward.¹¹ However, information on the types of wards surveyed in this study was not provided. In our study, the proportion of discharges completed on a ward varied considerably from 0% to 58%, depending on the speciality and the schemes in place. In general, the more specialised wards were less likely to have all medication available at discharge. The only factor that seemed to predict a high number of discharge prescriptions not needing additional dispensary involvement was the use of prepacked medication. A target figure for this indicator thus had to be chosen — almost arbitrarily.

Eventually, a consensus was reached on the following standard: 'A minimum of 25% of patients will be given all required

medication directly from the ward without additional dispensary input.'

It was agreed that given our baseline, this was challenging but achievable.

The 2007 results were very encouraging. Thirty percent of all discharge prescriptions were completed on the ward, and the dispensary only had to dispense 42% of prescribed discharge items. The positive change from 2005 seemed to demonstrate the benefit of focussing on this as an area for quality improvement.

While the difference in results between 2008 and 2007 is not statistically significant, we cannot demonstrate further improvement. We do know that changes in our service between 2007 and 2008 have influenced our discharge processes. Changes include the introduction of the 'green bag scheme' to assist patients to bring their medication into hospital, pharmacists writing discharge prescriptions and increased pharmacy technician

support on the wards. Because checking and assembling medication on the ward takes more individual staff time than straightforward processing in the dispensary, increases in activity can affect our capacity to provide the more individualised service. It is notable, if not surprising, that each time we have audited, we have seen an increase in the number of discharges (from 2005 to 2007, there was a 56% increase in discharges followed up and a further 24% jump in 2008). The final factor for consideration is that, while dispensing for discharge has clear advantages, returning dispensed medicines that are no longer needed can increase staff workload. This has been a topic of discussion within our department over the past 12 months and may have led to a more cautious use of DFD.

The future

When considering how to move forward with this indicator there are three separate issues to look at — the definition of the indicator, the method of data collection,

Table 1. Audit findings

	2005	2007	2008
No of wards	18	22	24
No of discharged patients	225	324	401
No of discharges followed up/found *	173 (77%)	270 (83%)	334 (83%)
% completed on the ward	17%	30%	25%
% fully dispensed in dispensary	50%	24%	31%
% partly dispensed in dispensary	33%	46%	44%
Significance of any differences in percentage completed on the ward with preceding year (chi square test)	-	p < 0.005	NS
Analysis by items			
Total number of items	903	1694	2295
% items needing to be dispensed or relabelled in dispensary	67%	42%	45%
% items not needing to be dispensed or relabelled in dispensary (i.e. already on the ward or available to the patient)	33%	58%	55%
Of items already available, the proportion which are PODs	68%	44%	49%
Of items already available, the proportion which are DFDs	18%	30%	24%
Of items already available, the proportion which are POSH	0	22%	21%
Of items already available on the ward, the proportion which are prepacks	14%	4%	6%

*Does not include those where patient died in hospital, transferred to another facility, self-discharged, had no medication prescribed on discharge, or discharge prescription not found.

and ensuring the improved process actually improves the patient experience.

Defining the indicator — At present, the indicator is defined quite narrowly to only include medication needed on discharge, which has to be on the ward and not require dispensing after the prescription has been written. Although this allows us to also measure the workload that has been diverted from the dispensary it does not take into account the benefits seen when



a continuous way of collecting most of the data, with minimal effort. The separation into number of PODs/DFDs etc will still need to be counted manually, but this is arguably only essential if detailed analysis is required.

From a patient's perspective the crucial issue is that the medication is ready as soon as possible. The source of the medication supply is less important. We do not know what the impact would be if we were to expand the definition of the indicator to include all medication ready before the patient leaves hospital, however, we believe that this important development should not be excluded when assessing the quality of our service. This was highlighted by colleagues in our department when the 2008 results were presented and we have taken this feedback on board. Therefore we have now decided to include discharge prescriptions written by pharmacists in advance regardless of whether or not items need to be dispensed as well as prescriptions fully completed and assembled on the ward. The use of PODs/DFD/POSH/prepacks will continue to be measured and analysed.

The patients' experience — This indicator does measure process as well as outcome. However, our final issue to consider is how to confirm that patients have a better experience with their discharge medication if we improve this process.

At our trust, all patients are asked to complete a feedback questionnaire just before they leave hospital. One question asks whether patients experienced a delay to their discharge, and if so, what the cause was. Waiting for medication always features in responses to this question. Once the new method of data collection is established it should be possible to check if those areas where more discharge medication is ready in advance see this success reflected in good patient feedback.

In conclusion, this is an important indicator of the quality of our clinical pharmacy service and we will continue to monitor it. However, instead of a single annual audit a more appropriate

From a patient's perspective the crucial issue is that the medication is ready as soon as possible. The source of the medication supply is less important.

and reliable method of continual or more frequent measurements will be employed. Linking these results to patient feedback will further improve the robustness of this indicator. ✚

Declarations of interest

The authors have no interests to declare.

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Do we need to reappraise our discharge medicines policies and approaches?

After a hospital stay patients are keen to leave as soon as possible, and waiting for medication is a common reason cited for delay in this. As hospital inpatient lengths of stays have fallen and throughput has risen pressure has increased on the process of discharging patients. Raliat Onatade and Reena Mehta (p11) discuss how they have used quality assessment to improve patients' discharge experiences.

There are many reasons for delayed discharge caused by medicine supply — including the discharge medicine prescription not being written on time. Whatever the causes, however, the responsibility for improving this aspect of the discharge process often remains with pharmacy. The *NHS Plan* in 2000¹ and Audit Commission report '*A spoonful of sugar*'² have made recommendations for solutions including the use of patients own

are medicine changes during the hospital stay and when medicines become separated from the patient (for instance if they move wards).³

An alternative approach would be for hospital pharmacies not to dispense any medicines for inpatients being discharged back to the community. Schemes already exist for home suppliers to dispense (and deliver) medicines to hospital outpatients such as renal patients or those requiring home nutrition. Sheena Castelino and colleagues (p35) discuss how they set up and audited a home delivery service for patients with HIV. A high satisfaction rating was found when patients were asked questions about information, convenience, communication and deliveries. The service was not without problems, which included some concerns about confidentiality and increasing the complexity of work within the HIV Pharmacy.

If such a system was to be introduced for inpatients there would be advantages of a speedy discharge and financial savings from zero VAT rating on dispensed medicines, but these might not be sufficient to counteract the disadvantages of patients potentially going without medicine in the short term and, more importantly, not receiving counselling about their medicines at the time of discharge. Although the UK National Patient Safety Agency have advocated that dispensed medicines should be checked with patients and they should be educated about their medicines⁴ and The National Institute for Health and Clinical Excellence guidelines on concordance and adherence recommends that patients preparing for discharge from hospital should be offered a full explanation of their medication⁵ it is doubtful how effectively this actually occurs in the hospital situation.⁶ If patients are offered counselling about their medicines it is not known whether many are cognisant enough, in

the busy and confusing environment of a hospital ward, to understand what is being explained to them. Ideally it may be better to see patients once at home to explain their medicines. Allowing discharge medicines to be prescribed on FP10s could be offered as an option for more able patients with simple medicine changes where urgent supplies are not important. The priority for patients who



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have had more complex medicine changes as an inpatient should be not only having the medicines ready as soon as possible but also to ensure they fully understand the changes and are able to take the new treatments. ✦

Duncan Petty, consultant editor

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medicines and dispensing for discharge (one-stop dispensing). One-stop dispensing has an additional advantage of allowing self-medication programmes by labelling the packs for patient use.

Neither of these recommendations has provided ideal solutions, however, and problems remain. The use of patients' own medicines is dependent on patients (or relatives) bringing their medicines into hospital with them. One-stop dispensing can lead to a large amount of waste if there

PW12. The selection, modification and reliability testing of a tool for rating the significance of pharmacists' clinical contributions.

Onatade R, Mehta R, Shallal O

PW13. A review of a pharmacist discharge prescription writing service in a large teaching hospital.

Considine A, Onatade R, Knighton S, Leung K

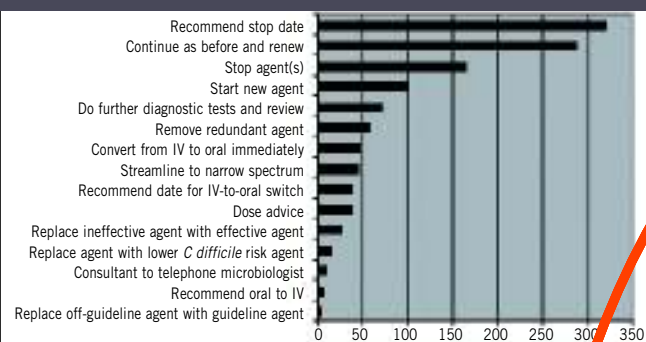
PW14. Developing the definition of a reportable prescribing error.

Eaton C, Cavell G, Onatade R

Table 1: The ten most common reasons for pharmacist e-referral to infection ward rounds

Reason	Frequency
General microbiology review	494
Request plan for course length	375
Off-guideline antimicrobial	109
Can treatment be stopped?	96
Narrow-spectrum alternatives	62
Appropriate antimicrobial (no guideline)	45
IV-to-oral switch eligibility	30
Need for antimicrobial?	24
Low-risk alternative (<i>Clostridium difficile</i>)	17
Toxic or subtherapeutic serum levels	16

Figure 1: Recommendations from infection ward rounds (November 2008 to July 2009)



System functionality allows CMMs and pharmacists to generate a patient list by ward and specialism in advance of the ward round. The system also provides for recording of ward round recommendations by selection of pre-specified outcome categories and a free-text narrative reported to doctors in the same way as a radiologist report on an ultrasound investigation. Ward pharmacists can print a report following the ward round that details all recommendations from the ward round.

In the nine months since the e-referral system went live, over 1,500 patients have been reviewed on joint ward rounds in five specialisms: general surgery; medicine and elderly care; cardiothoracic, trauma and orthopaedics; and neurosciences. An average of 175 patients is reviewed per month. Table 1 summarises the typical reasons for pharmacist referral to infection ward rounds. Request for a non-specific review of patients was the most common reason for referral. The reason for referral was not recorded in around 200 cases self-referred by CMMs.

Figure 1 illustrates the most common recommendations coded by CMMs in the e-referral system following infection ward rounds. Advice to stop antimicrobials or recommend a stop date represented the most frequent ward round intervention.

Discussion and conclusion

The e-referral system for infection ward rounds has been successfully implemented and is embedded in routine workflow for ward pharmacists and CMMs. The system has improved clinical governance of the infection ward rounds by creating secure electronic records of patient referrals within the hospital clinical information system and reporting ward round recommendations through the standard hospital results reporting system. The e-referral system allows monitoring of ward round workload to inform resource requirements, evaluation of reasons for referral to guide education and training, and reporting of ward round outcomes to demonstrate the value of the service. The microbiology department is exploring the potential for using the system outputs to secure funding from primary care commissioners for CMM ward round activity.

Using the hospital clinical information system provided advantages of user access control, ready access to pertinent biochemistry and haematology results and automatic mapping of demographic details. This approach is not transferable between hospitals using different clinical information system providers but the principles are applicable to any UK hospital environment and benefits can be realised for a relatively modest resource outlay by modifying existing hospital clinical information and pathology systems.

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Hamel oral presentation prize

The selection, modification and reliability testing of a tool for rating the significance of pharmacists' clinical contributions

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Pharmacists routinely contribute to the clinical and pharmaceutical care of patients. Information on the significance of these clinical activities can be used to assess their value, prioritise the allocation of resources and identify the most important systemic problems with care processes. A consistent method should be used for rating. This study is carried out to produce an up-to-date, reliable, simple to use tool for rating the clinical significance of pharmacists' contributions to individual patients' therapy.

Objectives

- To identify tools which can be used to score clinical pharmacy contributions
- To select the most appropriate tool
- To modify/update the selected tool, if necessary
- To test the reliability of the tool

Method

The lead investigators agreed on the most important criteria for the tool. A literature search was carried out. Papers that discussed the classification, categorisation or scoring of clinical pharmacy contributions with enough detail to enable replication were reviewed against the criteria. By testing against scenarios from our contributions database, the selected tool was reworded and updated with examples to reflect modern UK clinical pharmacy practice.

Thirty-four pharmacists used the tool to independently rate 21 randomly selected contributions from our database. Training for the pharmacists consisted of a short explanation of the tool descriptors. Reliability was assessed by determining inter-rater agreement using weighted kappa coefficients (κ). Weighted kappa allows close scores on an ordinal scale to reflect better agreement than scores that are further away. Raters were first randomly paired and weighted kappa calculated. To test if pharmacists' experience had an effect on reliability, they were then paired according to their years of experience, stratified into four levels. STATA/SE10 was used for analysis. Raters' comments were then used to amend the tool.

Table 1: Inter-rater agreement results

	Range	Weighted κ	
		Mean	Median
Randomised pairings	0.10 to 0.60	0.38	0.39
Experience level 1 pairing	0.28 to 0.45	0.37	0.37
Experience level 2 pairing	0.42 to 0.50	0.46	0.46
Experience level 3 pairing	0.47 to 0.75	0.63	0.68
Experience level 4 pairing	0.26 to 0.47	0.37	0.38
All paired experience levels combined	0.26 to 0.75	0.46	0.43

Kappa of 0.21 to 0.40 is taken to represent "fair" agreement; 0.41 to 0.60, "moderate".²

Table 2: The final tool

Rating	Descriptor
0	Contribution that leads to an undesirable outcome
I	A contribution that does not involve an incident that causes or could potentially cause harm or clinical benefit to the patient, but is good practice. It has no clinical effect on the patient, and may be an error in a legal requirement, or a therapeutic substitution. Eg, unsigned prescription
II	A contribution that may benefit patient care to a minor degree, OR may make treatment easier, OR which prevented an incident of minimal harm to the patient, OR an error which could have required extra observation. Eg, changing dose timings for convenience or to improve adherence
III	A contribution that prevented an incident that could have potentially led to reversible organ failure or harm, OR a contribution which resulted in improved treatment to evidence based standard. Eg, post MI patient no statin prescribed, pharmacist recommended starting a statin
IV	A contribution that prevented an incident of permanent organ damage or severe harm, OR an error which could have potentially caused major permanent harm. Eg, pharmacist noticed that a patient being fed via ng tube had an increased dose of insulin administered despite feed having been stopped hours before. BMs measured on pharmacist's advice, result was 0.6mmol/L.
V	A contribution that prevented an incident that could have resulted in a life or death situation.

Results

The agreed criteria were that the tool needed to be simple, but able to distinguish between different levels of potential harm; usable by individuals rather than a panel or several individual raters; consist of a single scale for both medication errors and pharmacists' non-error interventions; there should be evidence of validation; and it should have been used in a secondary care/acute medicine setting. The chosen tool was a scale based on the widely used Hatoum et al instrument.¹ Tables 1 and 2 show the main results.

Discussion

A tool from the literature has been modified and updated for rating UK pharmacists' clinical contributions. It is a single scale for rating both interventions and prevention of medication errors and does not need a panel discussion or more than one independent rater. The tool has fair to moderate reliability after minimal training. Reliability is seen to improve between pharmacists with similar levels of experience.

The next stage of development is to improve reliability by rewording the descriptors and adding more scenarios. Inter-rater agreement can also be improved by giving raters more training. As versions of the original tool have been widely used and adapted, it already has face validity. However, further validation is needed.

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Hameln poster prize

Patients do not want to talk to hospital pharmacists: a survey of adult patients discharged from a teaching hospital

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The UK Government White Paper, "Pharmacy in England: building on strengths — delivering the future", published in April 2008, asserts that providers of pharmaceutical services and their staff need a better understanding of the needs of those to whom they provide services by having processes in place which help them to shape service provision.¹ This report describes the results of a survey of hospital inpatients designed to elucidate the patient's need for information about medication, to what extent those needs were addressed and patient attitudes regarding the hospital pharmacy service in a UK teaching hospital.

Objective

To canvas views of inpatients at the time of discharge from hospital on specific aspects of their inpatient care relating to medication and the hospital pharmacy medicines management service.

Methods

The pharmacy service at Southampton General Hospital includes ward pharmacy. Over 50 wards are visited at least once daily by ward pharmacists and/or pharmacy technicians and 95% of inpatient drug prescriptions are reviewed daily. A questionnaire was developed to seek patients' views on the roles of various healthcare professionals in relation to medicines and their experience of the pharmacy service during their inpatient stay. Questionnaire design was influenced by the validated Picker Patient Experience Questionnaire and used mainly closed questions to facilitate quantitative analysis but opportunities for unstructured responses were also provided.² The questionnaire was piloted face to face with five patients and modified before finalising. The study took place over one week in March 2009. Questionnaires were distributed to adult patients in all specialisms by the ward pharmacist or ward pharmacy technician for completion while the patient awaited dispensing of their discharge prescription. Patients judged by pharmacy staff to be likely to have difficulty with completing a questionnaire (eg, patient with dementia) were excluded. Responses were anonymous: patients sealed completed questionnaires in an envelope addressed to the pharmacy department via hospital internal mail. Data were managed using SNAP4 Professional (Mercator Systems) and analysed using descriptive statistics. Approval from the University Biosciences Research Ethics Committee was sought and obtained prior to the study commencing.

Results

Approximately 500 patients are discharged per week and 74 questionnaires were returned completed; therefore around 15% of potentially eligible patients were sampled. The response rate could not be calculated as the total number of questionnaires distributed by pharmacy staff was not recorded. There was an even distribution of responses from male and female patients and 64% were over 55 years old.

Over 80% of respondents recalled being seen by a member of pharmacy staff during their stay but only one-fifth (14/74) expressed the view that it was the pharmacist's main responsibility to tell them about their medicines. Nineteen out of 61 patients (31%) who reported being seen by a member of pharmacy staff indicated that the pharmacy staff member did not explain how to use their medicines and 62% were not told about side effects. However, most patients (90%) believed that the pharmacy staff listened to them either very well or quite reasonably. When

Pharmacy Clinical Contributions Rating Scale

Rate according to what you think is the most likely clinical impact to the patient if the contribution made by the pharmacist had not occurred. **If you are finding it difficult to choose an appropriate significance rating, please assign the LOWEST of your possible choices.**

0 - Leads or could lead, to an undesirable outcome /pharmacist’s actions were inappropriate.

I - Good practice. No harm or clinical benefit to the patient

II - Minor benefit to patient care OR made treatment easier OR prevented an incident of minimal harm OR an error/incident which could have required extra observation

III - Most Level II contributions involving high-risk medication (corticosteroids, anticoagulants, antiplatelets, IV potassium, narrow-therapeutic range drugs, anti-diabetic drugs, strong opiates, chemotherapy, immunomodulatory agents, CNS drugs, anaesthetics, drugs administered intrathecally, ARVs, antimicrobials used in severe infections). If the high-risk medication is changed to make treatment more logical, or for staff convenience or ease, this is a level II contribution.

IV - Prevented an incident that could have potentially led to reversible organ failure, harm or increased level of care (i.e.

*readmission into hospital or from L1 to L2 or L2 to L3)

V - Prevented an incident that could have resulted in a life or death situation, permanent organ damage or severe harm, OR an error which could have potentially caused major permanent harm

**Re-admission – If you consider readmission to be the most likely outcome, the minimum level to assign is IV, however you may wish to assign a higher level, depending on your judgement of the severity of the impact on the patient.*

All contribution types in red must be reported on Datix as a medication related AI.

Description	Grade
Changes to medication choice/dose/frequency/strength/time of day/ formulation/ duration	
1. Changing formulation, dosage form, route, infusion duration, dose or frequency to be more, suitable, logical, easier or to make administration or supply logical or easier. There is no risk of therapeutic failure without the change	II
2. Ensuring patient doesn’t take medication that is not prescribed or not currently needed, including discontinuation of medication where the risk to the patients of continuation is not significant	II
3. Confirming/documenting indication and duration of a drug	II

Description	Grade
4. Dosing error where risk of harm OR likelihood of benefit is not significant	II
5. Resolving an unintentional medication reconciliation discrepancy (on admission, during a rewrite or at discharge) where the risk of harm, patient discomfort or loss of benefit is not significant	II
6. Starting a new drug regularly or as required to avoid or ameliorate minor discomfort or give minor benefit	II
7. Dose of the drug would result in serum drug levels in the toxic range, where patient is at risk of reversible organ damage	IV
8. High dosage (> ten times) upper normal of a drug without a low therapeutic index	IV
9. Dose of the drug prescribed is too low for a patient with serious disease who is acutely unwell	IV
10. Dose of a potentially lifesaving drug is too low for a patient having the disease being treated	V
<hr/>	
Advising addition, cessation, or change to medication	
11. In order to help patient reach goals of therapy of individual medications (where patient is not at risk of major or permanent harm if therapy is unchanged. If medication is stopped mainly because of no indication, but there is no benefit or risk driver, this is likely to be a level II contribution)	III
12. In order to help patient reach goals of therapy (where patient is at risk of major or permanent harm or death if therapy is unchanged).	V
13. To prevent harm, adverse effects, or drug interactions where the drug is high –risk, and/or risk of harm or discomfort to the patient is significant but not major or permanent (e.g. stopping an antimicrobial, most black dot interactions, duplicated prescriptions and renal dose adjustments, dosing error of narrow therapeutic range drugs is too high (half-four times the normal dose))	III
14. Where the drug being administered has a high potential to cause cardiopulmonary arrest or major permanent harm.	V

Description	Grade
<p>25. Action taken to avoid omission of a critical drug (simply ensuring the supply of critical medication as part of normal duties is not a clinical contribution)</p> <p style="text-align: center;">Omission of a critical drug is a reportable incident</p>	III
<p>TDM</p> <p>26. Ensuring required investigations or monitoring are carried out in accordance with good practice or to detect/prevent adverse outcomes from medication. This includes confirming a weight where weight is unknown</p> <p>27. Ensuring drug levels are taken, checked and/or acted upon as part of routine care (i.e. patient not at increased risk of harm)</p> <p>28. Dose of narrow therapeutic range drugs is too high (four to ten times the normal dose)</p> <p>29. Dose of narrow therapeutic range drugs is too high (ten times the upper normal dose)</p> <p>30. The serum level resulting from such a dose is likely to be in the severe toxicity range based on common dosage guidelines, e.g. serum theophylline concentrations greater than 30 micrograms per ml. More than 10 times the dose of a chemotherapy agent</p>	<p>III</p> <p>III</p> <p>IV</p> <p>V</p> <p>V</p>
<p>Allergy documentation</p> <p>31. Confirmation of allergy/intolerance status, not previously documented, but no change in treatment</p> <p>32.</p> <p>33. Confirmation of allergy/intolerance status, leading to a change in treatment</p> <p>34. Confirmation of allergy status leading to a change in treatment, where if the drug was given, there is a high potential to cause a life-threatening adverse reaction, such as anaphylaxis.</p> <p>Identification, avoidance or impact minimisation of drug interactions, ADR and side effects</p> <p>35. Preventing a known drug interaction which could have clinical consequences. Includes duplicate prescribing where there is a risk of minimal harm if both drugs/doses are administered</p>	<p>II</p> <p>III</p> <p>V</p> <p>II</p>

Description	Grade
15. In order to comply with guidelines (where patient is not at risk of major or permanent harm if therapy is unchanged)	III
16. So that the patient can benefit from evidence-based medicine	III
17. Ensuring VTE risk assessment is carried out and/or prescribing appropriate VTE prophylaxis/treatment (including changing the dose because of weight, renal function) where the patient is not at risk of major harm because of lack of prophylaxis or inappropriate dose	III
18. Resolving an unintentional medication reconciliation discrepancy (on admission, during a rewrite or at discharge) where the risk of harm, patient discomfort or loss of benefit is significant but not major or permanent. If the risk is major or permanent harm, consider level IV or V.	III
19. Any action taken to avoid noticeable discomfort or noticeable lack of benefit e.g. patient may not reach goals of therapy, including rationalisation	III
20. Proactive information given/action taken which has led to a change in treatment in order to help patient reach goals of therapy, make treatment safer, where patient is not at risk of major or permanent harm if therapy is unchanged	III
21. Clarifying a prescription or treatment plan where incorrect, missing or unclear information would have put the patient at risk of missing a dose or receiving the wrong or inappropriate medication or treatment or incorrect information about treatment would have been recorded or omitted.	III
22. IV to PO switches, unless the patient is at risk of deterioration or prolonged hospitalisation if therapy unchanged, in which case consider level IV	III
23. In order to help patient reach goals of therapy (where patient is at risk of reversible organ damage or reversible harm if therapy is unchanged).	IV
Omission of drug/dose or supply or storage issues	
24. Supply issues or action taken where there is a risk of the patient missing doses or doses being delayed of non-critical medication	II

Description	Grade
36. Avoiding minor side effects of a drug (unlikely to cause harm)	II
<p>Request for other drug information/specialist input</p> <p>37. Ensuring anticoagulant clinic referral, appointments, and dosing information is provided for patient at discharge III</p> <p>38. Ensuring correct information regarding medication is transferred at discharge where patient is at risk of getting inappropriate or contraindicated medication or lack of essential monitoring without this information. III</p> <p>39. Proactive information given/action taken which has led to a change in treatment in order to help patient reach goals of therapy, make treatment safer, where patient is not at risk of major or permanent harm if therapy is unchanged III</p> <p>40. Recommend/make a referral for specialist input on a patient's treatment, which has been accepted III</p>	
Counselling - Routine Patient counselling	II
Duplicate:- See nos. 13 and 34	
<p>Therapeutic substitution/ formulary / policy compliance</p> <p>41. Therapeutic substitution where the reason for changing is to comply with formulary guidance and there is no clinical or supply reason for the change I</p> <p>42. Formulary compliance/chair's action/senior needed to confirm prescription I</p>	
<p>Illegible/Ambiguous/Illegal/ Unsigned CD script</p> <p>43. Completion of paperwork/documentation which is needed for legal or policy reasons. The contribution will not affect the plan of treatment to be given, or medication to be supplied and was not made to resolve any confusion or inaccurate/incorrect clinical information I</p> <p>44. Incorrect controlled drug or other prescription which needs to be changed only for legal reasons I</p>	

Description	Grade
45. Action taken to prevent or resolve any confusion or inaccurate/incorrect clinical information where there is no change to treatment	II

A. Total extrapolated cost avoidance for 12 months (April 2014 – March 2015) = £5,793,440

B. Background:

- Every other month, pharmacy staff record all their patient - specific clinical pharmacy contributions and activities (prescription changes, advice etc.) for a day. This includes clinical activities carried out on the wards, dispensary and via telephone. This short report summarises the financial and clinical outcomes from the data recorded between April 2014 to March 2015.
- Total number of contributions recorded = **1958. This is equivalent to 6,527 clinical pharmacy contributions every month (not including weekend activity) or a total of 78,320** for the whole year.

C. Clinical significance of the contributions: Each clinical contribution that led to a change in a prescription or medication order is given a clinical significance rating. The ratings go from I to V according to the expected benefit to the patient or the potential harm if the contribution had not been made.

Clinical Significance Rating	Number and % of contributions
<p>I - Good practice was implemented, but there was no intent to have a clinical effect on the patient.</p> <p><i>'For example, formulary switches, unsigned prescriptions, incorrectly written controlled drug prescriptions'</i></p>	<p>57 (3%)</p>
<p>II – The contribution was of minor benefit to the patient, prevented minimal harm or prevented the need for extra patient observation</p> <p><i>'For example, stopping medication which is no longer indicated, advising on routine monitoring, changing formulation of a drug to aid administration'</i></p>	<p>1142 (58%)</p>
<p>IIIa –An incident or situation which could have led to an increased length of stay was prevented or improved upon.</p> <p><i>'For example, preventing less harmful side effects and drug interactions, ensuring guidelines are adhered to, correcting low-risk prescribing errors, changing treatment to help achieve therapy goals, and ensuring appropriate VTE prophylaxis is prescribed'.</i></p>	<p>353 (18%)</p>
<p>IIIb –A change was made to ensure that evidence-based standards of treatment and/or clinical protocols were followed.</p>	<p>345</p>

Pharmacy Clinical Contributions Report - Denmark Hill Report for April 2014 to March 2015

Clinical Significance Rating	Number and % of contributions
<i>'For example, changing or adding medication in line with NICE guidance'</i>	18 (18%)
<p>IV – Potential readmission, transfer to an increased level of care or reversible organ failure or harm was prevented.</p> <p><i>'For example, a patient receiving cyclophosphamide had not been prescribed their MESNA. The pharmacist contacted the Dr and ensured it was prescribed and given. Haemorrhagic cystitis is a common manifestation of urothelial toxicity in patients receiving cyclophosphamide. MESNA is given to prevent haemorrhagic cystitis in such patients.'</i></p>	21 (1%)
<p>V – A life or death situation, permanent organ damage, permanent or severe harm was prevented.</p> <p><i>'The pharmacist was asked about giving ATG rabbit at a dose of 10mg/Kg for the management of GVHD. The pharmacist had never used ATG for this indication so spoke with the haematology pharmacist, carried out a literature review and put a query into MI. There was little evidence available for ATG for GVHD and it was decided that the dose was too high. The pharmacist recommended a dose of 2mg/Kg as per the rejection protocol. A dose that was 5 times greater could be life threatening.'</i></p>	1 (0.05%)
<p>NA Information/enquiry answering and any contributions where the pharmacist disagrees with the outcome.</p> <p><i>'For example, a pharmacist from St Mary's Hospital contacted the renal pharmacist regarding the use of fentanyl in renal impairment and conversions of morphine and oxycodone to fentanyl. The renal pharmacist sent the pharmacist at St Mary's references for the conversions and a short summary of what our local practice is for opioid use in renal impairment.'</i></p>	39 (2%)

Pharmacy Clinical Contributions Report - Denmark Hill Report for April 2014 to March 2015

D. Outcomes: The outcomes of the contributions were as follows:

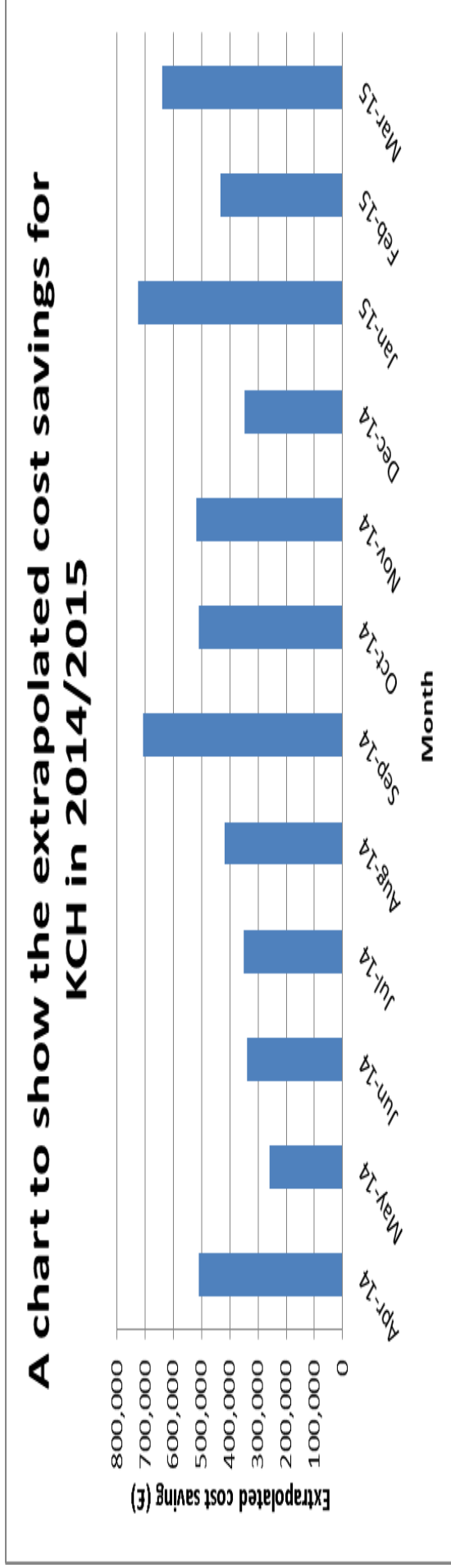
Contribution outcome	Percentage (%)
A medication order was started.	26
A medication order was cancelled.	18
A medication order was cancelled and a new one started.	30
A medication order was clarified.	7
No change was needed after discussion.	3
The contribution only involved providing information in response to an enquiry.	7
Monitoring or other action carried out with no change to a prescription.	8
The pharmacy recommendation was rejected (and pharmacy staff disagreed).	1

Pharmacy Clinical Contributions Report - Denmark Hill Report for April 2014 to March 2015

Associated cost avoidance: Using the figures above and extrapolating to monthly totals (i.e. if the same levels of clinical input occurred every day), the potential cost avoidance associated with the clinical pharmacy contributions to care can be calculated for each month, applying the methodology described by the University of Sheffield¹

Significance	Cost Avoidance (£)											
	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March
II	24,240	12,480	20,160	21,840	29,040	19,920	18,240	17,760	30,480	13,440	37,440	29,040
IIIa	144,000	108,000	168,000	162,000	168,000	282,000	162,000	126,000	150,000	192,000	198,000	258,000
IIIb	222,000	78,000	90,000	108,000	222,000	228,000	270,000	198,000	204,000	138,000	138,000	174,000
IV	118,720	59,360	59,360	59,360	0	178,080	59,360	178,080	0	296,800	59,360	178,080
V	0	0	0	0	0	0	0	0	0	84,800	0	0
Total	508,960	257,840	337,520	351,200	419,040	708,000	509,600	519,840	384,480	725,040	432,800	639,120

F.



Total extrapolated cost avoidance for 12 months (April 2014 – March 2015) = £5,793,440

⁴A systematic review of the effectiveness and cost effectiveness of interventions aimed at preventing medication error (medicines reconciliation) at hospital admission, The University of Sheffield, School of Health and Related Research. (SchARR), 2007. Commissioned by NICE.

5 Pharmacy discharge prescription writing: is this the way forward?

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The day before discharge (D-1) system was introduced in 2007 to engage the multidisciplinary team in planning discharges in advance. On the surgical wards at King's College Hospital, patients being discharged the following day are identified the day before discharge during ward rounds. D-1 requests are communicated by the nurse in charge to the pharmacist. The patients are visited by a Senior Clinical Pharmacist and the discharge medication (TTA) is ordered on the electronic patient record (EPR). The discharge prescription is sent to pharmacy if any medication is needed. The clinical information on the discharge prescription is completed by the doctor and (s)he is responsible for checking the discharge medication ordered by the pharmacist. Once the doctor is satisfied with the order, (s)he can print out the TTA and sign a copy.¹ As a result all the medications are available on the ward at the time of a planned discharge.

Studies have shown that pharmacist transcribing discharge prescriptions increase the number of pharmacist interventions, decrease prescription turnover time, and make cost savings by using patients' own drugs (PODs), decrease workload for the on-call team, decrease prescription error rates compared to junior doctors and reducing workload for junior doctors.^{2,3}

Objectives

1. Identify the proportion of discharge prescriptions written by pharmacy against the D-1 requests and reasons for not being completed if requested.
2. Compare the number and nature of interventions made on TTAs written by doctors and pharmacists.
3. Quantify the time taken for pharmacists to complete the D-1 requests.

Method

Data was collected over two one-week periods in November 2008 and January 2009 for five surgical wards during pharmacy working hours. D-1 requests were recorded by the Senior Clinical Pharmacist on a daily basis. Any discharge prescriptions written for these patients were identified. If a discharge prescription was not ordered then the reason for this was documented. A second check was conducted for all discharge prescriptions written by doctors and pharmacists, by another surgical pharmacist, and any interventions highlighted. The time taken to complete the D-1 requests for each ward was assessed. This time included obtaining the D-1 requests, gathering any information needed in order to complete the TTA, checking PODs and writing the TTA.

Results

Over the two week data collection period a total number of 134 D-1 requests were made and 45 (34%) discharge prescriptions were written by pharmacists. The most common reasons for those not written were the TTA already completed by the doctor (31/89; 35%), partially completed TTAs by doctors (20/89; 22%) and drug charts not being available due to patients in theatre (17/89; 19%).

The results showed that 40% (60/149) of TTAs prescribed by doctors needed to be amended by the ward pharmacist. These included 29/85 (34%) omission of drugs, 11/85 (13%) wrong formulation, 11/85 (13%) drugs no longer being indicated and 11/85 (13%) wrong dose being prescribed. However, only one (2%) intervention was made on the 45 drug lists ordered by pharmacists. This involved the wrong strength of drug being ordered.

The time taken for pharmacists writing TTAs on each surgical ward varied and is demonstrated in table 1 below.

Discussion

Discharge prescriptions were written by pharmacists for 34% of D-1 requests made. 57% (51/89) of the remaining requests were either

Table 1. Time spent completing D-1 on each ward over two five-day periods

Ward	Number of D-1 requests	Average time per TTA
Ward 1	56	7.7 minutes
Ward 2	23	10.2 minutes
Ward 3	18	13.9 minutes
Ward 4	17	12.4 minutes
Ward 5	20	8.8 minutes

completed or in the process of being completed by the doctors. In order to increase the number of TTAs written by pharmacists, communication needs to be improved between pharmacy and the multidisciplinary team to enhance the quality of the D-1 requests. Improvements can also be made by pharmacists taking responsibility for the partially completed TTAs and ensuring all discharge medications are available in advance. Development of a pro-forma for common short stay elective procedures, including antibiotic duration and choice of analgesics, will address the problem of drug charts not being available when needed. Pharmacy input in pre-assessment, with the use of this pro-forma, will allow TTAs to be written prior to admission.

Ward pharmacists made interventions on 40% of TTAs written by doctors compared to 2% on those written by pharmacists, indicating that the discharge prescriptions written by pharmacists were more accurate. Time can therefore be saved as the ward pharmacist does not have to contact doctors as frequently regarding TTA discrepancies.

Ward 1 is an elective, short stay ward, with minimal changes to regular medications. This is reflected by the higher number of D-1 requests and a shorter average time spent for pharmacists to write a TTA. However, Ward 3 and 4 are both non elective surgical wards and often have more complicated patients, with longer length of stay, resulting in fewer D-1 requests and a longer average time spent writing each TTA.

There are improvements that can be made to the D-1 process to increase the number of TTAs written by pharmacists. Fewer interventions are made on TTAs written by the pharmacists compared to those written by doctors, resulting in time saved for the pharmacist in dealing with TTA queries. Therefore the time pharmacists spend screening TTAs could potentially be used on completing the D-1 requests.

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6 A review of a pharmacist discharge prescription writing service in a large teaching hospital

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The efficient and seamless discharge of patients from hospital has historically been a difficult objective to achieve. Although the discharge process is influenced by a multitude of factors and involves a multidisciplinary approach, one way of improving the process is for pharmacists to write the discharge prescription (TTA). Across our Trust there are several wards including liver, surgery, haematology/oncology and neurosciences where specialist pharmacists currently write TTAs as part of the normal clinical pharmacy service (PTTAs). The specialities differ in terms of patient length of stay, discharge processes and patient complexity. The following performance measures are reviewed where the

latter service is undertaken on a ward: 75% of discharge prescriptions to be written by the pharmacist a day in advance of the patient's discharge date; 75% of discharge prescriptions written by pharmacists will not be changed after dispensing has been completed; 90% of patients will have their medication on the ward before they are ready to go home.

The aims of this study were to assess the impact and quality of the PTTA service.

Objectives

To assess:

- The times that PTTAs are written in relation to the date of discharge
- The impact of PTTAs on the availability of medications before the day of discharge
- Whether pharmacists writing TTAs had an impact on achieving a target discharge time of 11am
- The number and type of amendments needed when pharmacists write TTAs
- The number and type of errors made by pharmacists writing TTAs

Method

Data was collected over a five-week period (March–April 2009) in all four specialities (10 wards, 234 beds) where the PTTA service is in place. The pharmacy prescription tracking system was used to identify when TTAs were dispensed and sent to the ward. For two of these weeks prescriptions were double checked by another pharmacist. One speciality was excluded from the double checks.

Results

901 patients were discharged during the study period. 35% (314/901) received PTTAs. Table 1 shows the breakdown by speciality. The number of items per prescription ranged from one to 21 items (mean and median = six items). The reported time taken to write the prescriptions ranged from 1–30 minutes (mean = 9 mins, median = 10 mins). Table 2 highlights the performance compared to the targets.

Table 1. Breakdown of performance by speciality

Speciality	Total number of discharges	Total number of PTTAs
Speciality 1	202	167 (83%)
Speciality 2	23	8 (35%)
Speciality 3	47	47 (100%)
Speciality 4	629 (approx)	92 (15%)
Total	901	314 (35%)

Table 2. Comparison of performance with targets

Performance measure	Overall (n=291)	Range	Performance measure target
PTTAs written before day of discharge	80%*	64–88%*	–
PTTAs written one day before discharge	40%*	32%–58%*	75%
PTTAs written more than one day before discharge	37%†	13%–71%†	–
PTTAs amended or updated before discharge	8% (32 amendments)	–	<25%
PTTAs available on ward before discharge date (n=234)	85%	–	90%
Patients discharged before 11am	26%	0%–52%	–
Second screened PTTAs needing corrections due to errors (n=84)	10% (19 corrections)	–	–

* Excludes Speciality 2, where the service is based on writing prescriptions at day 10 of admission
 † Excluding Speciality 2, these figures are overall = 36%, range = 13%–26%

Of the PTTAs requiring amendments before discharge, 19 (96%) were on prescriptions written more than one day before discharge.

Discussion

The visible contribution of this service to a key Trust priority has led to further requests from other specialities for this service to be implemented. Feedback from the specialities and patients has been very positive and has improved the profile of the pharmacy service and integration into the multidisciplinary team.

Overall only 35% (314/901) of patients had a PTTA however this figure masks the wide variation between specialities which needs further investigation as the service specification states the aim is to write a minimum of 75% of prescriptions.

The time of discharge did not appear to be affected by this service. The quality of data regarding discharge times was poor therefore this is probably not a good indicator of the value of the service. However early availability of discharge medication will not necessarily prevent delays unless the other steps in the discharge process are optimised. The performance of this service on the number of discharge prescriptions written and available before the patients' discharge is much better than normally obtained from the traditional system.

8% of PTTAs requiring amendments compares well with results from other studies within the Trust which shows that 50–70% prescriptions written by doctors require amendments by pharmacists. However, errors were identified on PTTAs. Further work is needed to evaluate if PTTAs should be subject to the same scrutiny as TTAs written by doctors.

A lack of accurate discharge data may have led to an underestimation of some results.

This study has highlighted the positive achievements of a PTTA service and the results will be used to support further roll out.

7 Design of a documentation system to support continuity of pharmaceutical care for patients with acute coronary syndrome (ACS) on discharge from the hospital cardiology unit

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In the near future it is predicted that 90% of chronic health care shall be provided in primary care.¹ Acute coronary syndrome (ACS) patients are being discharged from hospital more rapidly so it is important that good communication links exist between hospital and community pharmacists so that ongoing pharmaceutical care issues (PCIs) that traditionally may have been resolved in the hospital setting can be addressed instead in primary care. Previous work with ACS patients has illustrated that pharmaceutical care issues such as up-titration of ACE inhibitors and beta-blockers are not always resolved during the hospital admission.²

It has been reported that problems exist at the interface between primary and secondary care and that discharge information provided to GPs is inadequate.³ Errors that occur on discharge are commonly detected in community pharmacies⁴ but most community pharmacists do not routinely receive information about their patient's discharge from hospital.

Objective

The present study was undertaken to design and evaluate a referral and follow-up system for maintaining continuity of pharmaceutical care for

AN INVESTIGATION INTO THE PROCESS AND IMPACT OF PHARMACISTS AT KING'S COLLEGE HOSPITAL WRITING DISCHARGE PRESCRIPTIONS

Catherine Kar Ki Leung
25 May 2009

*This research project is submitted in part fulfilment of the requirements for the Master in Pharmacy degree, University of London.
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Acknowledgments

The author would like to thank Raliat Onatade, Deputy Director of Pharmacy, Clinical Services, and Sarah Knighton, senior pharmacist and leader of the liver team at King's College Hospital, and the pharmacists who completed the data collection forms.

16 Developing the definition of a reportable prescribing error

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The definition of a prescribing error has been published.¹ This definition includes errors in decision making and errors in prescription writing. Prescribing accounted for 15.7% of medication related incidents reported to the National Patient Safety Agency (NPSA) between January 2005 and June 2006.² Of these 27 resulted in death or severe patient harm. Although the NPSA encourages reporting and learning from incidents it is well recognised that there is underreporting which may limit learning. In hospitals pharmacists promote safe medicines use by identifying and correcting prescribing errors. However, not all prescribing errors are reported as medication safety incidents and the decision whether to report depends on the individuals involved and their perception of the severity of the error or its potential for patient harm.

Although it may not be appropriate for all prescribing errors to be reported as patient safety incidents low reporting rates may limit opportunities to improve the overall quality and safety of prescribing. This project aims to define which prescribing errors should be reported as a patient safety incident.

Objectives

To develop and validate a list of prescribing scenarios which represent reportable prescribing errors

Methodology

Prescribing errors considered to be reportable were agreed by a group of clinical pharmacists. These were then used to develop a proposed list of definitions of a reportable prescribing error.

Pharmacists working across all clinical specialties in the trust were asked to document up to five errors identified during their day to day practice which met the definition of a prescribing error.

The documented prescribing errors were reviewed by two senior clinical pharmacists who independently decided whether each error was reportable or not and whether it met or did not meet one of the proposed definitions of a reportable prescribing error.

Agreement between the two reviewers was measured using Cohen's kappa coefficient (κ). Where the reviewers did not agree, or where the reviewers felt an error was reportable but did not fit one of the proposed definitions, the errors were discussed and where appropriate the wording of the definitions was refined or new definitions added.

The prescribing errors were then all rereviewed according to the revised definitions and the kappa value recalculated to measure the level of agreement with the aim of achieving at least "moderate agreement".³

Results

Pharmacists submitted 141 prescribing errors. In the first review 133 errors were rated by both reviewers. The reviewers agreed that 52 errors met the definition and 45 errors did not meet the proposed definitions of a reportable prescribing error. There was non agreement for 36 errors. This represented "moderate agreement" ($\kappa = 0.46$).

Following the first review changes were made to three definitions and one definition was added. Eight definitions required no amendment (Table 1).

In the second review of errors against the revised definitions 137 errors were rated by both reviewers. The reviewers agreed that 59 errors were reportable and that 53 were not. There was non agreement for 25 errors. This represented "substantial agreement" ($\kappa = 0.64$)

Discussion

Lack of awareness of what to report is one reason for not reporting medication errors. This project set out to define which prescribing errors

Table 1. Definitions of prescribing errors

Type	Definitions – Review 1	Definitions – Review 2
1	Overprescription of a cytotoxic or immunosuppressant	Overprescription or underprescription of a cytotoxic or immunosuppressant <i>likely to result in the patient receiving the wrong dose</i>
2		Omission of an "essential" drug
3		Underprescription of a drug for treatment of a "critical" condition
4		Overprescription of a drug with a narrow therapeutic index
5		Prescription of a contraindicated drug due to drug/drug, drug/disease or drug/food interaction
6	Prescribing a drug or dose incorrectly or illegibly with potential for patient harm	Prescribing a drug, dose or frequency incorrectly or illegibly with potential for patient harm, <i>or omission of essential treatment</i>
7		Prescribing a drug or drugs without adequate monitoring
8		Prescribing an incorrect presentation of a drug with potential for patient harm
9		Prescribing a drug resulting in incorrect preparation and administration of a dose e.g. diluents, concentration or rate
10	Inappropriate duplicate prescribing or prescribing two drugs for the same indication	Inappropriate duplicate prescribing or prescribing two drugs for the same indication <i>with potential for patient harm</i>
11		Any prescribing error which has resulted in actual patient harm
12	—	<i>Prescribing any drug for the wrong patient</i>

are reportable to make the decision whether to report easier. However, it is clear from the fact that the two senior clinical pharmacists rating the errors did not reach 100% agreement that the decision to report still has some degree of subjectivity despite the use of specific, agreed definitions. This may be due to differences in experience during years of clinical practice resulting in different thresholds for reporting, or different interpretations of the descriptions of the prescribing errors contributed by the clinical pharmacists which sometimes lacked detail.

A kappa score of 0.64 has been accepted as "substantial agreement" and the list of definitions used in the second rating exercise will be promoted to pharmacists as a tool to increase the rate of reporting of prescribing errors. Information from these reports will then be available to enhance prescribing training programmes to ensure prescribers are aware of the risks of prescribing.

We conclude that the project has met its aim of developing a list of reportable prescribing errors. Further work to assess its usefulness in promoting reporting of prescribing errors in clinical practice is planned.

References

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PW15

Assessing the quality of pharmaceutical care:
a feasibility study

Conference abstract and related reports

Onatade R., Shah R., Alidina F., Alimi-Odiora A.,
Goble E., Mitchell M

Related undergraduate dissertation cover and
acknowledgement pages

Bansri Bharania and Parita Meshvania

Assessing the quality of pharmaceutical care: a feasibility study

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Ensuring and measuring quality of care is very important in today's NHS. However there is no research on measuring the quality of pharmaceutical care that acutely ill patients in hospitals receive. Establishing criteria for assessing quality of care follows well-defined steps: identifying the criteria, testing them for feasibility and validating them.¹

In the first stage of this work more than 33 themes and criteria were identified.² The aim of this study is to test a proposed methodology of feasibility determination.

OBJECTIVES

- To derive standards of care for selected criteria
- To assess the feasibility of assessing the quality of pharmaceutical care in individual patients, using the derived standards

METHOD

This was a retrospective study, conducted on patients identified (via the electronic patient record system) as having been discharged from surgical and medical wards during one week in November 2009.

Four researchers each selected one criterion and developed specific data abstraction forms with standards of care. The criteria were – management of significant drug interactions, prescribing and management of warfarin, prescribing and management of narrow therapeutic index (NTI) drugs (carbamazepine, phenytoin, digoxin and sodium valproate) and drug dosing in renal impairment.

Standards for appropriate care were established for each criterion. Each form underwent several pilots and amendments by the lead investigators (RO and RS) to ensure accurate data collection and to limit subjective assessments. Eligible patients for each criterion were then identified separately by each researcher.

Methods used for identification were – checking all discharge prescriptions to identify patients prescribed the named drug, checking laboratory results to identify patients with an eGFR < 60ml/min and checking electronic drug charts to identify those prescribed significantly interacting drugs.

From the lists of identified patients, each researcher randomly selected 10 patients for review, using Microsoft Excel random number generator. It was agreed that in the time available, this number of patients was a realistic target.

The reliability of the final data collected was confirmed by RS double-checking a minimum of two patients' records (10%) per researcher. Documented patient care and written orders were compared to the standards or recommended management. A failure to meet these meant inappropriate management. If only some of the recommended care was provided, this judged as partly appropriate. Conclusions on appropriateness were discussed and agreed by all.

Ethics committee approval was deemed to be unnecessary, however the lead investigators agreed that if an issue was identified which they thought was likely to be a continuing source of error or harm, an appropriate healthcare professional looking after the patient would be contacted.

RESULTS

Table 1 shows the results for each criterion. For NTI drugs, reasons for inappropriate care included missed doses, indication not documented and drug level monitoring not done despite there being clinical reasons for checking a level. For warfarin, 11/15 (73%) patients received partially appropriate care, as some standards were met. Often, care was judged inappropriate because of poor documentation of discharge processes. With drug interactions, 29 "black dot" interactions were identified, but none had been documented. 5/14 (36%) patients possibly suffered effects from the interactions.

The results also show that patients are more likely to receive appropriate care in relation to renal drug dosing.

DISCUSSION

This method was suitable for assessing the appropriateness of pharmaceutical care for each criterion. However, clinical judgement was still required. The disadvantages of using purely explicit criteria or standards in measuring the quality of medical care have long been known, and it is generally accepted that a degree of implicit judgement from a clinician is desirable.³ The time required per patient was not excessive. However a rate-limiting step was the time taken up in obtaining paper medical notes.

This study highlights the issue of lack of documentation by pharmacists and other staff regarding medication issues. This problem was anticipated, therefore the assumption was made that no documentation meant no action. This is in line with medico-legal practice.

Problems with the retrospective method included the inability to ascertain reasons for certain actions or decisions and difficulties in obtaining information (some patient notes were not available, therefore the number of patients reviewed varied). However, prospective data collection would be more resource-intensive. There would also be a risk of biasing the findings if health professionals were aware of the study. Retrospective data collection is therefore deemed to be the most appropriate method for this type of study.

Undertaking this pilot has led to several potential uses being highlighted. It is suitable for assessing the quality of individual services (e.g. anticoagulation, diabetes), by considering groups of patients with the same criteria. It can also be used as a form of individual pharmacist assessment by reviewing, in detail, the care given to one or two patients. Combining several criteria and applying to individual patients could enable an assessment of the overall quality of pharmaceutical care received. This gives a more holistic view of patient care, compared to assessment by reviewing patient drug charts.

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Table 1: Summary of results for individual criteria

Criterion	Patients eligible for that criterion	Patient records reviewed	Patients receiving fully appropriate care	Patients judged to have received inappropriate care	Time taken per record review (approximate)
Management of NTI drugs (available)	18	18	78% (14/18)	22% (4/18)	41 minutes (no range)
Management of warfarin	25	15	13% (2/15)	13% (2/15)	20 minutes – 2 hours
Management of drug interactions	50	20 (14 with significant interactions)	43% (6/14)	57% (8/14)	10 – 60 minutes
Drug dosing in renal impairment	85	12	92% (11/12)	8% (1/12)	15 minutes to 2 hours

Assessing clinical pharmacy services

A number of ways in which clinical pharmacy departments can demonstrate value were showcased at this year's UK Clinical Pharmacy Association autumn symposium. Shona Kirk reports.

Ward level pharmacy interventions are cost-effective at Guy's and St Thomas' NHS Foundation Trust, London, according to work presented by Duncan McRobbie, clinical governance pharmacist at the trust. Mr McRobbie presented data collected during the trust's annual intervention and activity study, in which activity is measured over one week and interventions are measured over the following week. He also described results from a cost-effectiveness analysis that was performed on these data.

A total of 36 activities were described during the study. This involved 918 hours of ward-based activity. In addition, 2,780 interventions were recorded. A total of 85% of these were accepted, 7% were for information only, 4% were unclassified and 3% were rejected by members of the medical team. Mr McRobbie noted that pharmacy staff identified safety or efficacy as the two main reasons for interventions (41% and 43%, respectively).

The cost avoidance resulting from ward-based pharmacy interventions recorded during the study was calculated at £250,000 to £500,000 per week. This was determined using levels of severity defined in the EQUIP study (which was published last year and demonstrated that approximately 9% of prescriptions written in a selection of UK hospitals contained at least one error [identified by pharmacists]) and costs related to medication errors (as defined by a group at the School of Health and Related Research, The University of Sheffield). Given that the clinical pharmacy service costs about £22,000 per week, the clinical pharmacy service at the trust appears to be cost-effective, said Mr McRobbie.

Mr McRobbie suggested that this methodology could be used in a benchmarking exercise to provide evidence for the value of clinical pharmacy services across the UK.

Raliat Onatade, deputy director of pharmacy, clinical services, at King's College Hospitals NHS Foundation Trust, London, described work carried out to develop standards for assessing the quality of pharmaceutical care received by acutely ill

hospital inpatients. Standards of care relating to four criteria were developed (management of narrow therapeutic index [NTI] drugs, management of warfarin, management of drug interactions and drug dosing in renal impairment). A retrospective study of patient notes was conducted to assess compliance with these standards over one week. Failure to meet the standards, or the absence of evidence that recommended actions had been carried out, led to a judgement of inappropriate care. "Where there was absence of documented information it was deemed that care was not given," explained Ms Onatade. This is in accordance with standard medico-legal practice.

For NTI drugs, 78% of patients received fully appropriate care and 22% received inappropriate care. Inappropriate care was primarily a result of omitted doses, a lack of documented indications and drug levels not

being taken when indicated. For management of drug interactions, 43% of patients were judged to have received fully appropriate care in relation to identified drug interactions, while 57% received inappropriate care. A total of 29 'black dot' interactions were identified. However, none of these had been documented. As a result, 36% of patients may have suffered effects from the interactions.

"We found that [using standards in this way] was suitable for assessing the appropriateness of pharmaceutical care," said Ms Onatade. Although she highlighted that, since the standards are not tailored to individual patients, expert clinical judgement is still required to make a final decision.

Ms Onatade noted that poor documentation about decisions taken regarding medication was an issue. She suggested that pharmacists should document in a patient's notes when they make a contribution to care.

Eliminating boundaries between science and practice

"We must not forget what our unique selling point is . . . we are the experts in drugs and medicines," said Duncan Craig, head of the School of Pharmacy at the University of East Anglia. Everyone who is a pharmacist is a scientist, he said. But he pointed out that pharmacy students need to develop skills such as patient counselling, as well as a good knowledge base. Skills and knowledge have to go in tandem with each other, he said.

Professor Craig suggested that the statement 'students want relevance' is untrue when considering what pharmacy students want from their degree. "The key thing is not relevance, it is contextualisation," he suggested. For example, he noted that subjects such as basic chemistry and thermodynamics, which are traditionally unpopular with students, have received high ratings at the University of East Anglia. He suggested that this is because students are made aware that subjects such as thermodynamics will enable them to understand the science behind clinical outcomes.

Secondly, Professor Craig suggested that the statement, 'students do not like science or anything conceptually difficult', is also untrue. He pointed out that the lecturer who teaches first year organic synthetic chemistry is the top-rated pharmacy teacher in the school. "The person who came second teaches acid-based equilibria and thermodynamics and the person who came third teaches pharmacy practice," he noted. "What we find is there is no correlation between the subject area, or the relevance of the subject area, and how well that goes down with the students. What the students really want is to come away with a learning experience, and feeling that they have actually gained something," he explained.

What can universities do to help the pharmacy profession, asked Professor Craig. He suggested that scientific leadership has not been as good as it should be within the profession. "We have got to be seen as the 'go-to' people for expertise on medicines," he said. Professor Craig also suggested that there should be a much greater level of practitioner involvement in scientific studies.

The UK Clinical Pharmacy Association autumn symposium, entitled 'Progress in Practice', was held in Daventry on 19–21 November 2010.

King's
King's College Hospital
NHS Foundation Trust

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Assessing the quality of pharmaceutical care: a feasibility study

Onatade R., Shah R., Alidina F., Alimi-Odiola A., Goble E., Mitchell M.
November 2010



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BACKGROUND

- Earlier work identified themes and criteria which were important in assessing the quality of pharmaceutical care¹
- Next step in the development of quality indicators is to assess for feasibility
- Aim: To pilot a method for feasibility determination

¹Onatade R., Zuhair A. (2009). Abstract presented at UKCPA Symposium, Nov 2009

OBJECTIVES

- To produce standards of care for selected criteria
- To use the standards to test the feasibility of assessing the quality of pharmaceutical care in individual patients

PROCESS

- Retrospective
- Criteria
 - management of significant drug interactions
 - prescribing and management of warfarin
 - prescribing and management of narrow therapeutic index (NTI) drugs (carbamazepine, phenytoin, digoxin, sodium valproate)
 - drug dosing in renal impairment
- Standards of care produced for each criterion

PATIENT IDENTIFICATION

- All discharges during a selected week in November 2009 were checked
 - Drug interactions: All inpatient prescriptions checked for the presence of ‘black dot’ interactions
 - Renal drug dosing: Lab results checked for eGFR less than 60 ml/min
 - TDM drugs: Discharge and IP prescriptions checked for TDM drugs prescribed
 - Warfarin: Discharge prescriptions checked
- 20 patients randomly selected from each list

RECORD REVIEW

- Documented care and written prescriptions compared to the standards of care/recommended good management
- Failure to meet standards = inappropriate
- Absence of documented information = care not given/action not performed
- Reliability: 10% of records rechecked

Drug Interactions

Drug	Strength	Form	Freq	Date started	Date stopped	Interaction with other prescribed drug?

Black dot interactions
Interaction 1:

Drug 1:	
Drug 2:	
Potential effect of interaction:	
Interaction documented:	Rating source
Did patient experience effect:	YES/NO Details: YES/NO/CANNOT TELL
Drug changed:	From to date
Other management	

PA – prior to admission • = BNF black dot (clinically significant interaction)

Dosing in Renal Impairment

On Admission
Creatinine Clearance : _____ ml/min (if able to calculate) eGFR: _____
Now please complete table one

Midway through stay
if values differ from admission (+/- 10ml/min) please complete this section and table 2.
If not, put a X here
Date: _____
Creatinine Clearance : _____ ml/min eGFR: _____

On discharge
If values differ from admission or mid-way point (+/- 10ml/min) please complete this section and table 3.
If not, put a X here
Creatinine Clearance : _____ ml/min eGFR: _____

Drug	Dose	Freq	Does dose need modifying for renal impairment according to the BNF 58 or The Renal Handbook 3 rd Ed in this pt?	Dose modified for renal function y/n or N/A	Dose modified correctly y/n/na	If dose not modified correctly what should it be?	What are implications if dose not modified or modified incorrectly?	If the dose required modification was reason for not documenting modifying dose if so what was the reason and where was it documented?

Warfarin Management

Dose of warfarin: Is this the loading or maintenance dose?
 • Was warfarin started on this admission? • yes • no • not documented

• **Part 1: complete if warfarin was started on this admission**
 • What was the loading dose?
 • Was INR checked during this loading period? • yes • no • not documented

• **Part 2: complete for all patients on warfarin**
 Indication for anticoagulation with warfarin (tick as appropriate):
Venous thromboembolism (VTE)
 • Single DVT (distal)
 • Single DVT (proximal)
 • PE (first episode)
 • Recurrent VTE
Other indication – please specify
 • Previous medical history:

INR
 • INR on admission: • yes • no • Not documented
 • Was INR high on admission: • yes • no • Not documented
 • INR on discharge: INR target:
 • During admission, was the INR reading outside the target range on more than one occasion? • Yes • No • Not documented

Warfarin Management

Medication	Any potential drug interactions with warfarin (yes or no)	Action taken if there was a drug interaction (can include any advice, documentation or endorsement by a pharmacist)	Was this action in accordance with the BNF? (yes or no)
Was the Trust's procedure for discharging a patient on warfarin complied with? (tick as appropriate) <ul style="list-style-type: none"> • Not documented • Referral to an anticoagulation clinic for continued INR monitoring • INR test carried out on the day of discharge • Issue an anticoagulation booklet • Appropriate counselling and the patient is aware of the following: <ul style="list-style-type: none"> • there are 3 strengths / colours of warfarin • what dose to take and when • what to do if a dose is missed • dose has been written in the yellow anticoagulation book • the date of the next INR test and the necessary procedure • inform the local pharmacy before using any OTC medicine • notify doctor of any plans to lose weight or get pregnant 			

Warfarin Management

Possible side effects	Was this experienced? (yes / no / not documented)	How was this managed?	Was this management appropriate? (yes or no)
Bleeding			
Hypersensitivity			
Rash			
Other, please specify:			

Overall management
 Was this patient appropriately managed?
 • Fully • Partially • No

Warfarin Management

	No of eligible patient records	No of pt records reviewed	Fully approp. care received	Inapprop. care received	Approx. time taken per record
Management of NTI drugs	18	18	78%	22% (4/18)	41 minutes
Warfarin	25	15	13% (2/15)	13% (2/15)	20 -120 minutes
Drug Interactions	50	20 (14 with significant interactions)	43%	57%	10 – 60 minutes
Renal drug dosing	85	12	92%	8%	15 – 120 minutes

Results

- Narrow Therapeutic Index Drugs: 78% of patients' care fully appropriate
 - Missed doses, indication not documented, TDM not done when indicated
- Warfarin: 13% of patients' care fully appropriate, 73% partly appropriate
 - Poor documentation of discharge processes
- Drug interactions: 14 patients, 29 interactions. 43% of patients' care fully appropriate
 - No documentation of interactions, 36% patients possibly suffered adverse effects
- Renal drug dosing: 92% of patients' care fully appropriate

Retrospective Limitations

- Some standards need changing
- Difficulties in obtaining notes
- Lack of documentation
- Care often partly appropriate – gaps in care most likely

Discussion

- Method suitable for objectively assessing the appropriateness of pharmaceutical care
- Explicit standards cannot take individual patients into account - clinical judgement still required
- Time required per review is acceptable - gets shorter
- Lack of documentation re medication issues
- If it wasn't documented, it didn't happen

Potential use Discussion

- To assess quality of individual services
 - For individual pharmacist/student assessment
 - Peer review
- Several criteria to be combined and applied to individual patients for a holistic assessment

King's College Hospital NHS Foundation Trust

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Assessing the quality of pharmaceutical care in hospital inpatients: An audit of the management of warfarin therapy

By: Adefunke Allimi-Omidiora
Supervisors: Ralliat Onatade and Rita Shah



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Introduction

- Pharmaceutical care identifies, resolves and prevents drug related problems
- Warfarin: a commonly prescribed, high risk anticoagulant drug
- Previous work carried out highlighted what criteria pharmacists felt determined appropriate pharmaceutical care
- Pharmacists can apply the NPSA alert 18 recommendations into providing adequate pharmaceutical care

King's

Objectives

- To measure the quality of pharmaceutical care received by patients discharged on warfarin over a one week period
- To pilot the feasibility of measuring the quality of pharmaceutical care using this method

Standard

- 100% of patients discharged on warfarin should receive full pharmaceutical care

King's

Objectives

Audit criteria:

- INR carried out on admission and discharge
- Appropriateness of action if INR was outside range during admission
- Appropriateness of any vitamin K use
- Appropriate action taken if patient was on a drug with significant drug interaction or a relative contraindication to warfarin
- Safe discharge procedure (issued an anticoagulant book, referred to an anticoagulant clinic or GP, counselling)

Method

- Study duration: 23rd to 29th November 2009 (inclusive) – 413 discharges across the specialities considered
- Of this 25 were discharged on warfarin, 20 of which were randomly selected
- Data was collected from the patient's electronic and paper notes, drug and anticoagulant charts
- At the time of data collection, 5 patient notes were not available; therefore 15 patients reviewed
- Where there was no documentation of a criteria or action being carried out, it was interpreted that the event did not occur

Results

ID	INR on admission	INR on discharge	Appropriate admission INR was out of range?	Appropriate admission drug interaction?	Full discharge procedure	Overall management
1	NA	✓	NA	NA	3/3	Full
2	✓	✓	✓	NA	3/3	Full
3	✓	✓	X	NA	3/3	Partial
4	✓	✓	✓	✓	1/3	Partial
5	✓	X	X	NA	X	Partial
6	✓	X	X	X	X	Partial
7	✓	✓	X	✓	1/3	Partial
8	✓	✓	NA	✓	X	Partial
9	✓	✓	NA	NA	X	Partial
10	✓	✓	X	NA	1/3	Partial
11	NA	X	X	NA	1/3	Partial
12	NA	✓	X	X	1/3	Partial
13	✓	X	NA	NA	2/3	Partial
14	NA	X	X	NA	X	Poor
15	X	X	NA	NA	X	Poor

Example 1

Patient 2: female, 62yrs

- Days of admission: 2 days
- Fall secondary to postural hypotension
- On warfarin prior to admission (AF)
- Omission of dose when INR was high (3.7, 3.89, 2.92)
- INR was monitored all through admission and was in range on discharge
- Full discharge procedure was followed
- Drug interactions – omeprazole, bezafibrate, aspirin; all prior to admission

Verdict: Full pharmaceutical care

Example 2

Patient 15: male, 79 yrs

- Days of admission: 14
- Admitted for diaphragmatic flutter
- On warfarin prior to admission (AF)
- INR not checked on the day of admission, last INR was done 3 days before discharge
- 7 INR readings all through admission despite several dose alterations
- Drug interactions: omeprazole, carbamazepine (stopped on admission)
- No documentation of any discharge procedure

Verdict: Poor pharmaceutical care

Discussion and conclusion

- The audit standard has not been achieved as only 13% (2/15) of the patients discharged on warfarin received full pharmaceutical care
- Suggests that most patients discharged on warfarin are not receiving appropriate pharmaceutical care whilst in hospital
- INR: not done consistently in some patients despite dose changes
- Endorsement of a drug chart / TTA does not necessarily indicate appropriate action in the context of drug interactions
- In the full discharge procedure - issue of anticoagulant book and counselling were the least documented

Discussion and conclusion

- The importance of documentation

Feasibility

- Time taken: 20 minutes - 2 hours
- It is possible to assess the quality of pharmaceutical care with this method provided there is sufficient documentation

Limitations

- Small sample size, limited specialities

Discussion and conclusion

Recommendations

- Pharmacists should consistently perform and document the relevant elements of appropriate pharmaceutical care
- Documentation of all contributions made by pharmacists should become an integral part of the department's policy

References

- Donabedian A. The quality of care. How can it be assessed? JAMA. September 1988; 260 (12):1743 – 8
- National Patient Safety Agency. Patient safety alert 18, (www.npsa.nhs.uk). March 2007

Thanks for listening
Any Questions????



Assessing the quality of pharmaceutical care in hospital inpatients: An audit of drug dosing in renal impairment

Emma Goble, Raliat Onatade and Rifa Shah
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Introduction

- The need to assess the quality of pharmaceutical care is very important and of high interest within NHS¹.
 - This audit was part of a set of projects test the feasibility of auditing the quality of pharmaceutical care.
 - This particular audit focused on drug dosing in relation to renal function.
- ### Objectives
- To test the feasibility of conducting an audit to measure pharmaceutical care in relation to renal impairment.
 - To audit the quality of care that patient's with renal impairment receive during their stay in hospital in relation to dose modifications.

Standards

- 100% of patients should have their drug dosing adjusted correctly according to their renal function
- In 100% of patients the reason for not modifying the drug dosing should be documented in the patients notes

Method

- A data collection form was designed with set criteria;
 - whether dosing had been modified correctly,
 - if the dose was not modified was the reason for not doing so documented in the notes,
 - whether or not the patient suffered any harm.
- Patients discharged between the 16th to 22nd November 2009 were identified using electronic patient records (EPR).
- All patients with a creatinine clearance of less than 60ml/min were included.
- 20 patients were randomly selected.
- In 7 of the 20 patients data was collected using drug charts and discharge notifications (group 1).
- In 13 of the 20 patients data was collected using their discharge notifications (group 2).

Results

Out of 432 patients discharged in the 7 day period, 85 had an eGFR of less than 60ml/min on admission.

Table 1: Table summarising audit findings

	Mean age of patient/ years (range)	Mean length of stay/ days (range)	Mean eGFR/ ml/min/1.73m ² (range)	Mean number of drugs taken (range)	Number of drugs which needed dose adjustment (% of total prescribed for that group)	Number of drugs inappropriately dosed (%)	Number of patients who required dose adjustments (%)	Number of patients who had drugs dosed inappropriately
Patient group 1 (n=7)	75 (49-91)	5 (0.5-17)	47 (32-59)	8 (0-12)	7 (14%)	1 (14%)	4 (57%)	1 (25%)
Patient group 2 (n=13)	76 (42-98)	10 (1-33)	37 (8-59)	12 (5-23)	17 (11%)	2 (12%)	8 (62%)	2 (25%)

Results continued

- Of the 207 drugs prescribed across the two groups, 24 (12%) required dose modification.
- Of these 24 drugs, 21 (88%) were correctly dosed appropriately.
- 75% of patients had their drug dosing appropriately modified in relation to their renal function.
- It is feasible to conduct this audit.

Case study 1

68 year old male was receiving 40mg enoxaparin on admission. The patients eGFR decreased from 57ml/min to 26ml/min. The patient should have been changed to heparin as per trust guidelines. However, the enoxaparin appears to have been continued throughout the patients stay.

Case study 2

76 year old female was receiving a dose of 200mg TDS of bezafibrate when according to their eGFR of 39 ml/min they should have been receiving 200mg every 1-2 days^{2,3}. It was documented that the patient had a raised creatine kinase level but no extra detail was given.

Case study 3

85 year old male was receiving 250mg BD of ciprofloxacin when they had an eGFR of 8ml/min. They should have received 250-500mg OD¹. 100% of the dose can be given in exceptional circumstances². However, unable to obtain the patients medical notes it was decided this was inappropriate as their was nothing documented on EPR to indicate a high dose was required.

Discussion

- 75% of patients who required dose modification for renal impairment had all their drug dosing modified appropriately.
 - The average time to collect and analyse data was 1.5 hours per patient (range: 0.5-2 hours). This was due to patients being prescribed a varying quantity of medications and the difficulty in locating any documentation to explain the reasoning behind doses.
 - Patients with an eGFR of less than 50ml/min should be included as most drugs do not require dose modification at 60ml/min.
 - Most patients did not have their weight recorded in their notes. This meant that CrCl could not be calculated. In these patients their recorded eGFR was used instead.
 - It would be desirable to collect data solely using a patients drug charts and medical notes as this would mean that all drugs administered during admission could be evaluated rather than just the drugs the patient was discharged with.
- ## Recommendations
- If a patients drug dosing should be modified but was not, reasoning behind this should be clearly documented.
 - Pharmacists should be made aware of the importance of dosing modification in patients in renal failure and review dosing in all patients with renal impairment.
 - Patients with an eGFR < 50ml/min be identified.
 - Use paper drug charts, discharge notifications and patient notes to collect data.

References
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Assessing the Quality of Pharmaceutical Care Provided to Diabetic In-patients

Bansri Bharania

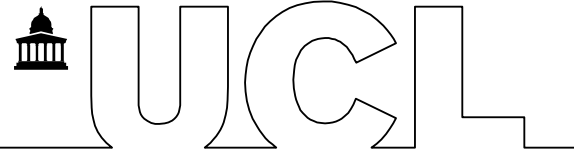
In partial fulfilment of the requirements for
the MPharm degree, King's College London

Supervisors: Greg Scutt, Raliat Onatade, Rita
Shah

January 2012



UCL SCHOOL OF PHARMACY
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**ASSESSING THE QUALITY OF PHARMACEUTICAL CARE PROVIDED TO DIABETIC
IN-PATIENTS**

PARITA MESHVANIA

28th may 2012

*This research project is submitted in part fulfilment of the requirements for the Master in
Pharmacy degree, University of London.*

Department of Pharmacy Practice, School of Pharmacy, University of London

Type of project: 100% hospital based

Acknowledgements

I would like to thank my external supervisors; Raliat Onatade and Rita shah at King's College Hospital for supporting me and providing resources that were needed to perform this study.

I would also like to thank my internal supervisor Felicity smith as I am very grateful to her for supporting me throughout my write-up process.

I'd like to express my appreciation to the school of pharmacy, UCL for co-ordination and funding of this research project.

Abstract

Aims: To measure the overall quality of pharmaceutical care received by diabetic in-patients at King's College Hospital and to establish the feasibility of the tool used to measure the quality of pharmaceutical care.

Method: Thirty patients' pharmaceutical care was reviewed using a data collection form that had been previously validated in another study. It contained multiple criteria for example, antibiotic therapy, drug interactions, renal impairment. Medical notes and drug charts were analyzed to check for presence of the criteria that would be applicable to each patient on the data collection form. Overall judgement was based on how many criteria were fully, partially or not met.

Results: Overall across all criteria; 9 patients received fully appropriate care, 14 patients received partially appropriate care and 6 patients received inappropriate care. All patients eligible for Narrow therapeutic index Drugs, Parenteral anticoagulant therapy, Warfarin treatment and Dosing in renal impairment received fully appropriate care. Diabetic treatment, drug interactions and failure to receive critical medication patients received partially appropriate care.

Conclusions: The majority of patients' across all criteria didn't receive fully appropriate pharmaceutical care. The key pharmaceutical issues identified for criteria with poor care were: lack of control of BM. The importance of documentation should be addressed. Pharmacists should be recording their contributions, care activities, and advice in patient notes to ensure it is noticed by other members of the healthcare team. Pharmacists and nurses need to work with each other to ensure doses of critical medicines are not missed

The key weakness of this study was the limited sample size of patients reviewed. As a result the findings cannot be generalised to all diabetic patients. Another is that some patient's were judged as having received inappropriate care despite standards being met. This was because some standards are more critical to one patient than they are to another. To overcome this; standards could be weighted of importance.

PW16

A comparison of two methods for
recording and analysing clinical
pharmacy contributions

R Onatade, R Chowdhury, C Bell, R Mehta

A comparison of two methods for recording and analysing clinical pharmacy contributions

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Once a year, pharmacy staff at this teaching hospital trust record all their patient-specific clinical contributions. A clinical contribution is defined as any action that directly results in, or is intended to result in, a change to patient management or therapy. The results of detailed analyses inform business cases, service review and safety initiatives. Some staff also keep copies of their contribution reports in their portfolios. This report describes two different methods of recording and assessing clinical pharmacy contributions and compares and contrasts their features and the type of information produced.

OBJECTIVES

- To compare and contrast the results of two methods of collecting clinical pharmacy contribution data
- To describe the pros and cons of the two methods
- To describe the similarities and differences between, and the potential utility of, the types of information produced by the two methods

METHODS

In 2007 and 2008, the first method (method I) was employed. This entailed pharmacy staff recording all clinical contributions made during a selected week in June of each year. In 2008, daily occupied bed data (OBD) for the week was additionally collected. In July 2009, a different method (method II) was used. For this method, only contributions made for patients newly admitted during an index week in July were recorded. Recording contributions for these patients continued during the next week or until discharge (whichever was the sooner). Date of admission and the number of patients newly admitted daily on each ward were also recorded. To enable future direct comparison with previous years, contributions from wards using the newly-introduced Electronic Prescribing and Medicines Administration (EPMA) system and those from junior pharmacists were documented using method I and therefore excluded from this analysis.

A pharmacist checked all forms for completion and consistency. The data for 2007 and 2008 were combined and analysed together. 2009 data was analysed separately. Descriptive analyses, using Microsoft Excel, were performed on contributions for inpatients and discharge prescriptions (TTAs).

RESULTS

Method I: During the 2 weeks, 2676 contributions were recorded. The ratio of Inpatient:TTA = 83:17. King's has approximately 950 beds, therefore over the 2 weeks, 2.8 contributions (2676/950) were made per bed (average 1.4 contributions/bed/week). 1064 individually identified patients had 2197 contributions (contributions which did not note hospital

numbers were excluded) = mean of 2.06 contributions (2197/1064) per patient in whom a contribution was made (mode, median = 1, range = 1 to 23). As not all contributions could be linked to a patient, this figure of 2.06 is a minimum. Overall acceptance rate was 98%. 46% of contributions led to a prescription being cancelled (with or without a new prescription), 23% led to a new prescription being added with no other change.

Method II: 609 contributions were included. All patients' hospital numbers were recorded. Ratio of inpatient:TTA = 84:16. There were 580 new admissions in the index week, giving 1.05 recorded contributions per newly admitted patient (609/580). 314 of the 580 newly admitted patients had at least one clinical contribution, i.e. 1.94 contributions per patient in whom a contribution was made (range 1 to 10). 58% of all contributions occurred in the first 36 hours of the patient stay, 29% on the 3rd and 4th days and 13% on subsequent days. Overall acceptance rate was 97%. 44% of all contributions led to a prescription being cancelled, 35% led to a new prescription with no other change.

Tables 1 and 2 show comparative results using the different methods.

DISCUSSION

Similar findings from the two methods include the ratio of inpatient to TTA prescriptions, contribution types, and the specialities in which pharmacy staff were most likely to make contributions. The wards excluded from analysis in 2009 are unlikely to have substantially affected the rankings as they were generally either wards with relatively low admission rates or less complex with historically lower contribution rates.

Each method provides useful information. Method I measures total clinical activity. Data collection is straightforward and can be for as little as 1 day. More detailed information on clinical pharmacy contributions to individual patients' care throughout their stay is available using Method II. It shows where input is greatest during a patient's stay and demonstrates how important it is to review patients early in their stay. Method II can be used to model the impact that changes in throughput or to bed configuration may have on the service. E.g. shorter lengths of stay will lead to increases in clinical pharmacy input, even if bed numbers remain static. Some data such as numbers of contributions/bed/week, contributions per OBD and contributions per new admission can be used as baseline figures, for benchmarking and demonstrating trends within and between hospital trusts.

Each method has limitations. Raw figures obtained using method I must be normalised with bed numbers or OBDs. With method II, it can be difficult to ensure that all newly admitted patients are identified, therefore under-reporting is more likely. Also, data collection must take place over a period of time, which is more resource-intensive. To obtain a complete picture of the full patient stay, e.g. whether there is a peak in contributions during longer stays or at discharge, discharge dates are needed. These can be collected retrospectively.

Future work includes combining the best features of both methods. One option is to record all clinical contributions over at least two weeks, with dates of admission and discharge. This will be time-consuming, therefore shorter, more frequent monitoring will be piloted. Another planned development is the inclusion of clinical significance ratings.

Table 1: Types of contributions

Top contribution types 2007/08	%	Top contribution types 2009	%
Need for drug	22.1	Med history discrepancy/omission	29.9
Med history/TTA/rewrite discrepancy or omission	20.3	Need for drug	17.7
Choice of dose	14.7	TTA discrepancy or omission	11.3
Choice of drug	6.6	Choice of dose	11.1
Duration of therapy	5.6	Frequency/Timing	6.3
Frequency/Timing	5.6	Choice of drug	5.5
Administration-route/rate	5.2	Pt advice/ education/ counselling	2.6

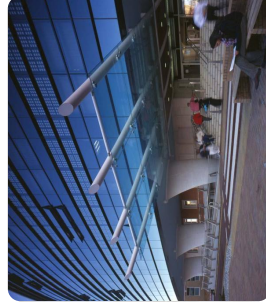
Table 2: Comparison of contribution rates per specialty, using different denominators

	Average number of contributions per bed per (2007 + 2008 data)	Number of contributions per OBD (2008)	Number of contributions per newly admitted patient per week (2009)		
Critical care	7.4	Critical care	1.22	Critical care	2.4
Cardiac	2.6	Cardiac	0.60	General medicine	1.5
Liver	2.3	Liver	0.39	Neurosciences	1.4
Haematology	1.4	Haematology	0.31	Haematology	1.4
General medicine	1.3	General medicine	0.27	Liver	1.2
Paediatrics	1.3	Surgery	0.26	Renal	0.8
Surgery	1.2	Women's	0.22	Surgical	0.8

A comparison of two methods for analysing clinical pharmacy contributions

R. Onatade, R. Chowdhury,
C. Bell and R. Mehta

King's



Background

- The value of documenting clinical pharmacy contributions separately from patients' records is often debated
- Discussions also focus on what should be documented, and how often
- King's College Hospital NHS FT is a 950 – bed, 2^o and 3^o care teaching hospital in SE London
- Pharmacy staff at King's record clinical pharmacy contributions once a year
- Data is mainly used to inform business cases and service evaluations
- This study compares the outputs of two methods of recording and measuring clinical contributions

Aims

- To compare and contrast the results of two methods of collecting clinical pharmacy contribution data
- To describe the pros and cons of the two methods
- To describe the similarities and differences between, and the potential utility of, the types of information produced by the two methods

A Clinical Pharmacy Contribution is 'any action that directly results in, or is intended to result in, a change to patient management or therapy'. It has to be patient-specific.

Method I

In 2007 and 2008, pharmacy staff recorded all clinical contributions made during one week in June. In 2008, daily occupied bed data (OBD) for the week was additionally collected. There were no exclusions.

Method II

In 2009, only contributions made for patients admitted during an index week in July were recorded. Recording for these patients continued during the next week or until discharge (whichever was the sooner). Admission dates and the number of patients admitted daily were also recorded.

Exclusions : Method I was used on those wards covered by 1st year pharmacists and those where electronic prescribing had been introduced.

Analysis

- Descriptive analyses using MS Excel
- Method I: 2007 and 2008 data combined and analysed together
- Method II: 2009 data analysed separately. Data from wards using Method I excluded
- Only contributions for inpatient and discharge prescriptions will be presented

Results

	Method I	Method II
No. contributions	2676/2 weeks	609
Inpatient: TTA	83:17	84:16
Contribution rate	1.4 /bed/week	1.05/admission
Contributions /pt (in whom a contribution was made)	Approx 2.06 (range 1 to 23)	1.94 (range 1 to 10)
Outcomes	55% Rx cancelled, 46% Rx started, 28% other	44% Rx cancelled, 71% Rx started, 19% other

Types of Contributions

	Method I	Method II
1. Need for drug	22%	18% (2)
2. Med history/TTA/ Rewrite discrepancy	20%	Med History discrepancy 30% (1) , TTA discrepancy 11% (3)
3. Dose choice	15%	11% (4)
4. Drug choice	7%	5.5% (6)
5. Duration of therapy	6%	
6. Frequency/Timing	6%	6% (5)
7. Administration	5%	
8. Pt advice/ education/ counselling		2.6% (7)

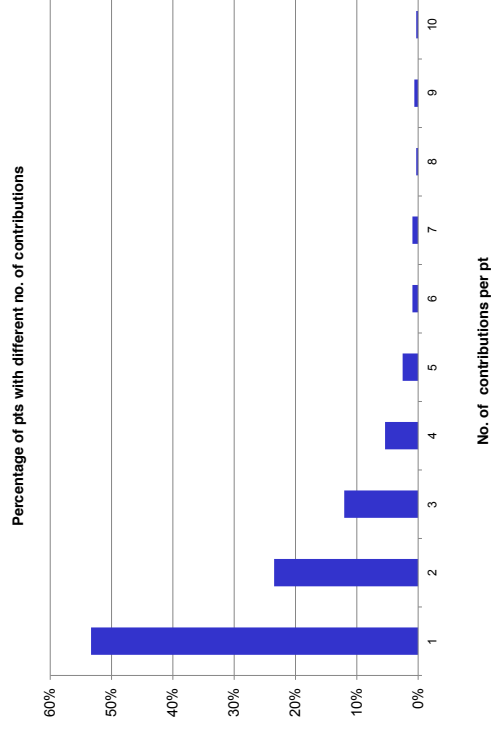
Contribution Rates per speciality

Contributions per bed/wk	Contributions per OBD in 2008	Contributions per new admission/wk
Critical Care = 7.4	Critical Care = 1.22	Critical Care = 2.4
Cardiac = 2.6	Cardiac = 0.6	Gen Medicine = 1.5
Liver = 2.3	Liver 0.39	Neurosciences = 1.4
Haematology = 1.4	Haematology = 0.31	Haematology = 1.4
Gen Medicine, Paeds = 1.3	Gen Medicine = 0.27	Liver = 1.2
Surgery = 1.3	Surgery = 0.26	Renal, Surgery = 0.8

Method II - Additional data

- 58% of contributions occurred on the 1st and 2nd days of patient stay
- 29% on 3rd and 4th days of stay
- 13% of all contributions occurred after 4th day (up to day 12)

Method II - Additional data

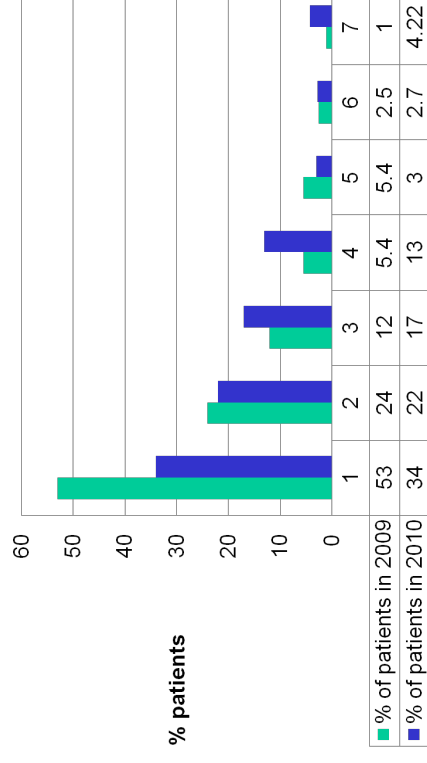


Method II – 2009 and 2010 comparison

	Method II - 2009	Method II - 2010
No. contributions	609	664
Inpatient: TTA	84:16	81:19
Contributions /pt (in whom a contribution was made)	1.94 (range 1 to 10)	1.78 (range 1 to 11)
Outcomes	44% Rx cancelled, 71% Rx started, 19% other	51% Rx cancelled, 64% Rx started, 19% other

Method II – 2009 and 2010 comparison

Number of contributions per patient – 2009 vs 2010



Clinical Significance ratings 2009 and 2010 comparison and economic value

	2009	2010 (approx)
Potentially lethal (KCH rating V)	1	3
Potentially serious (KCH rating IV)	10	15
Potentially significant (KCH rating III)	192	222
Minor (KCH rating II)	364	307
Minimum value	£21,000	£28,000
Maximum value	£48,000	£64,000

Advantages of each method

- Each method provides useful information
- Some similar findings – IP:TTA ratio, contribution types, specialty contribution rates
- Method I :
 - Measures total clinical workload
 - Simple
 - Single day, point prevalence or extended period data collection
- Method II :
 - Less data, more detail
 - Describes care along the patient pathway
 - Good for modeling activity changes

Limitations of each method

- Method I:
 - A lot of data
 - Raw figures must be normalised with bed numbers or OBDS
- Method II:
 - Difficult to ensure all new admissions are identified
 - Longer time period needed for data collection
 - Not a complete picture of the full patient stay
 - Discharge dates should ideally also be collected

Discussion

- Both methods are suitable for collecting data for understanding and evaluating a clinical pharmacy service
- Method I is traditional, and can be analysed differently
- Method II - recording contributions for new patients and following through - is not common
- Method II is worth doing at least once because of the rich data provided
- Ideally combine the best features of both methods
 - e.g. record all contributions, over 2 weeks, with admission and discharge dates
- Annual monitoring may not be the best system
 - more frequent recording, shorter data collection period?

Conclusion and Future Work

- Primary purpose is to describe and understand the clinical pharmacy service
- Information has a variety of uses
 - Before-and-after data is now being used to measure the impact of electronic prescribing on types and rates of contributions
- Clinical significance ratings extend the usefulness
- Recording all contributions on one day every other month (additionally collecting admission dates) to start in April

PW17

Quality of vancomycin prescribing
and clinical outcomes in individual
patients at a London
teaching hospital

M Talpaert, M Aroyewun, R Onatade

induction should be used for the management of patients with AF and when rapid induction with co-prescribing of dalteparin would be appropriate.

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Quality of vancomycin prescribing and clinical outcomes in individual patients at a London teaching hospital

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Vancomycin is a classical glycopeptide antibiotic effective against severe gram-positive bacterial infections.^{1,2} Intravenous vancomycin has a narrow therapeutic index and requires close monitoring of serum concentration. The Trust Adult Antimicrobial Guide (referred to as "trust guidelines") was developed to support and promote clinicians' appropriate prescribing of antibiotics.

A baseline audit conducted between 17 November and 5 December 2008 assessed the adherence to trust guidelines on vancomycin prescribing, administration and therapeutic drug monitoring (n=40). The results showed poor adherence and consequently possible poor management of vancomycin therapy. The present audit set out to assess the quality of pharmaceutical care received by the individual patients previously audited and individual patients' clinical outcome based on vancomycin management.

OBJECTIVES

- To assess the quality of vancomycin management received from day 1 to 5 of treatment in individual patients
- To compare the quality of management with actual patient outcomes

STANDARDS:

- Vancomycin level is taken at the appropriate time
- The action taken on vancomycin level is appropriate
- Patient clinical outcome improves

METHOD

Retrospective data collection from electronic patient records (EPR) and/or paper clinical notes, observation and drug charts of 20 patients from the previous audit. Laboratory results of serum drug levels, white cell count (WCC) and C-reactive protein (CRP) were assessed. Documented patient improvement entry made in patients' notes by multidisciplinary teams was sourced.

The criteria used in assessing proper vancomycin management (referred to as "vancomycin management criteria") were: appropriate dose and frequency, drug levels taken at right time, correct action taken on drug levels, and absence of unnecessary missed doses.³

The criteria used in assessing clinical outcome ("clinical outcome criteria") were an improvement in

WCC, CRP, temperature, drug level within reference range and a documented overall clinical improvement.

RESULTS

Table 1 shows the results for 20 patients who received vancomycin for different indications. Vancomycin prescription was appropriate in all the patients (i.e. correct indication). Patients 1 to 3 were treated for diabetic foot, patients 4 to 6 for cellulitis infection, 7 and 8 treated for endocarditis and 9 to 20 were neutropenic sepsis patients. All patients had normal renal function,¹ defined as creatinine <150µmol/L. Frequency of vancomycin dosing was appropriate in all the patients. 90% (18/20) patients received appropriate vancomycin doses and microbiology approval was given for 80% (16/20) of patients.

Only one patient (patient 4) had perfect vancomycin management which led to 100% improved clinical outcome. This confirms earlier findings. Only 7/20 had levels taken at the correct time.

Patients 4, 5 and 6 were the only patients on vancomycin monotherapy but only patient 4 saw an improvement in his clinical condition.

DISCUSSION

A link between the vancomycin management criteria and the clinical outcome criteria was impossible to establish. This could be due to several factors such as variety of clinical conditions treated, severity of infections, co-usage of other antibiotics in addition to vancomycin, patients' age, co-morbidities, individual variability in pharmacokinetics and pharmacodynamics, the small patient population and the lack of information available for half of them.

The selected criteria were used to identify gaps in care as well as to aid prioritisation but factors mentioned above could have influenced individual patients' improvement.

The limitation of the audit was the small number of patients and incomplete documentation by clinical staff.

Case matches or use vancomycin monotherapy patients would be needed to demonstrate pharmacist input on patient outcome.

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Table 1: Summary of vancomycin management and clinical outcome in individual patients

Patient	Vancomycin management			Clinical outcome		
	Time levels taken appropriate	Appropriate action taken on drug levels	Unnecessary missed dose	WCC/CRP/Temp improvement	Drug level within reference range	Overall clinical Improvement
1	No	Yes	No	No, No, Yes	Yes	No
2	No	Yes	No	Yes, Yes, Yes	No	Yes
3	No	Yes	No	Yes, Yes, Yes	Yes	Yes
4	Yes	Yes	No	Yes, Yes, Yes	Yes	Yes
5	No	Yes	No	Yes, No, No	Yes	No
6	Yes	Yes	Yes	Yes, Yes, Yes	Yes	No
7	Yes	Yes	No	Yes, Yes, No	Yes	Yes
8	Yes	Yes	No	No, No, Yes	Yes	No
9	No	No	No	Yes, Yes, Yes	Yes	Yes
10	No	Yes	No	Yes, Yes, Yes	Yes	Yes
11	No	Yes	No	Yes, Yes, Yes	Yes	Yes
12	No	Yes	No	No, No, No	Yes	No
13	No	Yes	No	Yes, Yes, Yes	Yes	Yes
14	Yes	Yes	No	No, No, No	Yes	No
15	Yes	Yes	No	Yes, No, No	Yes	No
16	No	Yes	No	Yes, Yes, Yes	Yes	Yes
17	No	Yes	No	Yes, Yes, Yes	No	Yes
18	No	Yes	Yes	Yes, Yes, Yes	Yes	Yes
19	Yes	Yes	No	No, No, No	Yes	No
20	No	Yes	No	Yes, Yes, Yes	Yes	Yes

PW18

Adaptable “scope of practice” template for hospital
pharmacist prescribers

Raliat Onatade and Angie Wong

Adaptable "scope of practice" template for hospital pharmacist prescribers

Fri, 25/05/2012 - 13:27

By **Raliat Onatade** and **Angie Wong**

Raliat Onatade and **Angie Wong** introduce an adaptable template that describes the scope of a hospital pharmacist independent prescriber's practice

Independent prescribing by pharmacists became legal in 2006. However, hospital pharmacists have so far not exploited this opportunity to improve medicines use in hospital inpatients on a large scale. At this trust, we encountered difficulties when attempting to describe, in a single "scope of practice" document, the range of specialist and non-specialist independent prescribing situations that hospital pharmacists might encounter. This article describes a model scope of practice which was developed to overcome this problem.

In April 2003, supplementary prescribing for pharmacists and nurses was introduced. Supplementary prescribing involves working in partnership with an independent prescriber within an individualised clinical management plan (CMP). It is suitable where clinical assessments and management are the responsibility of the independent prescriber. The supplementary prescriber is responsible for continuing care, informed by the CMP.

The scope and limitations of supplementary prescribing became obvious as experience with it increased. The requirement for an initial assessment and diagnosis by an independent prescriber, periodic joint reviews and individual CMPs mean that supplementary prescribing is seen as overly bureaucratic. Additionally, supplementary prescribing is best suited for long-term conditions, and cannot be used unless the patient has first been assessed by an independent prescriber and the treatment plan written and agreed.

For hospital pharmacists providing pharmaceutical care for acute inpatients, where they may be the ones to recommend treatment, the need to have first a written, signed plan, does not provide sufficient flexibility and freedom. The opportunity for hospital pharmacists to improve patient care and access to medicines using supplementary prescribing is thus limited.

The introduction of independent prescribing was intended to overcome some of the limitations of supplementary prescribing. According to the Department of Health, independent prescribing is defined as "prescribing by a practitioner responsible and accountable for the assessment of patients with undiagnosed or diagnosed conditions and for decisions about the clinical management required, including prescribing". The potential benefits for hospitals of independent prescribing by pharmacists include reduced delays for the supply of discharge medicines, prescribing medication on admission to avoid missed doses of regular medicines and speedier treatment after medication reviews. Clinical pharmacists should also be able to take responsibility for recommendations they make in situations where advanced clinical assessment is not necessary.

In this pharmacy department, the focus for independent prescribing was initially on transitioning specialist clinical pharmacists from supplementary to independent prescriber status. A "scope of practice" template, suitable for nurses and pharmacists, was developed. The template was based on the concept of practitioners prescribing for specific conditions or in defined specialties and works well for this. However, it is not appropriate for the prescribing

situations encountered by pharmacists carrying out their normal ward and clinical pharmacy duties and thus cannot be used to achieve the additional benefits described above.

We therefore needed a template which fulfilled a number of roles. It needed to describe the pharmacists' roles and responsibilities in different prescribing situations, as well as be flexible enough to take into account any specific expertise and knowledge of individual pharmacists. The **Panel** shows a scope of practice template, completed for a senior surgical pharmacist, which was developed to meet those needs. It can easily be adapted for use in any clinical area.

How it works

Section A is a standard statement. It describes all the possible prescribing circumstances hospital pharmacists might find themselves in and therefore does not change substantially. It is based on the different stages of a patient's stay. The first point allows for correction of drug history taking errors (medicines reconciliation and unintentional transcription errors). Points 2 and 3 cover prescriptions started or changed during the patient's stay. Point 2 relates to prescriptions or orders initiated by the pharmacist and which may not necessarily be discussed with the doctors first. The personal prescribing formulary, described in more detail below, provides the flexibility to take into account specialist expertise.

Point 3 is for those situations where the decision to prescribe is initiated by another independent prescriber, taken after a multidisciplinary team discussion, or where the pharmacist is asked to prescribe a drug by another member of the team (eg, a consultant). This happens commonly on ward rounds. The pharmacist should not write the prescription unless he or she agrees with the decision to prescribe. Point 4 is for prescribing discharge medicines.

Section B describes the specialist prescribing area, if appropriate. It can be changed, minimised or removed altogether if the pharmacist does not have specialist expertise. Written guidelines or protocols which the pharmacist will be expected to follow are listed in Section C. Section D details the pharmacist's limitations as well as his or her responsibilities with respect to communication and working with the multidisciplinary team. Because of the inherent risks involved when more than one person is prescribing for a patient, the statement regarding communication and documentation responsibilities was considered essential. This section cannot be changed or removed.

Section E is the personal prescribing formulary. Individual pharmacists will list the drugs or British National Formulary sections that they are competent to initiate without having first discussed with a doctor, or in any situations not covered in Section A. For less experienced or non-specialist pharmacists, Section E might include only basic medicines such as analgesics, antiemetics and laxatives.

Sections F and G are self-explanatory and can be modified as necessary.

Summary

In summary, this template has allowed us to describe comprehensively the circumstances under which hospital pharmacists who provide both specialist and non-specialist care, usually to the same patient, can prescribe independently. We believe this is representative of the day-to-day work of most ward and clinical hospital pharmacists. As well as in surgery, we have agreed scopes of practice in the areas of cardiac, renal and hepatic prescribing, all of which are easily adaptable for individual pharmacists with varying levels of experience and competency.

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INDEPENDENT PRESCRIBING SCOPE OF PRACTICE FOR A SURGICAL PHARMACIST

Name

Job title

Base

Section A

Scope of practice statement

I propose to undertake prescribing for inpatients. The focus of my prescribing will be in, but not restricted to, pre- and post-operative patients.

The prescribing is intending to be performed in four distinct situations:

- 1 Continuation of previous drug therapy initiated by GPs or hospital doctors. This would include writing up medicines that have been omitted unintentionally on admission clerking and rewritten or transcribed drug charts. This can be carried out in all areas and for all drugs included in the BNF apart from cytotoxics.
- 2 (a) From my personal prescribing formulary, initiating prescriptions according to the BNF, local policies/guidelines or local accepted practice. This would include discontinuation of inappropriate drug therapy. (b) Initiating dose adjustments of drugs which may not have been initiated by me, according to the patient's renal or liver function and drug therapeutic levels. Changing formulations and/or dose/frequency of drugs which may not have been initiated by me to enable continued administration. This can be carried out in all areas and for all drugs included in the BNF apart from cytotoxics.
- 3 Prescribing after verbal discussion with consultants and/or specialty registrars. This can be carried out in all areas and all drugs included in the BNF apart from cytotoxics.
- 4 Prescribing discharge medicines when doctors have confirmed that a patient is clinically stable for discharge. This can be carried out in all areas and all drugs included in the BNF apart from cytotoxics.

Section B

My aim is to provide medical and non-medical treatment to these patients pre- and post-operation, so that optimal management of their pain control, anticoagulation, infections, and bowel movement is achieved. Primary and secondary cardiovascular disease prevention would also be considered according to national and local guidelines. Also, I aim to ensure that pre-existing medication continues to be appropriately managed.

I will only prescribe for patients who have been assessed by doctors beforehand and only after reviewing assessments documented in a patient's medical record. Before undertaking any prescribing, I will review a patient's biochemistry and haematology results where relevant.

Section C

Where applicable, I will adhere to national and local guidelines or, where there are no written guidelines, I will follow local practice. These include:

- Guidance on the administration of medicines in the perioperative period
- Minimal invasive surgery protocol for short stay hip and knee replacements
- Guidelines for the management of post-operative nausea and vomiting (adult)
- Adult antimicrobial pocket guide
- Guideline for the use of iodine-based radiological contrast agents and the prevention of contrast-induced nephropathy
- Management of oral anticoagulation during invasive procedures
- Medicines management for bimaxillary osteotomy patients
- Use of proton pump inhibitors in surgery
- Policy for the use of intravenous paracetamol

Section D

Where I have prescribed from my personal formulary or adjusted medication without prior discussion with the clinical team, this will always be documented in the patient's medical record. Other prescribing which may also need to be explained in more detail for the safety of the patient, governance and/or communication to the wider clinical team, will also be noted in the patient's record.

Section E

Personal Prescribing formulary (BNF 59)

- 1.1 Antacids and compound alginates
 - 1.2 Prokinetics
 - 1.3 Antisecretory agents and Mucosal protectants
 - 1.4 Acute diarrhoea
 - 1.6 Laxatives
 - 1.9 Drugs affecting intestinal secretions
 - 2.8 Parenteral anticoagulants inc Epoprostenol for Vascular patients only
 - 2.9 Antiplatelet drugs
 - 2.12 Lipid regulating drugs
 - 3.4.1 Antihistamines
 - 4.6 Drugs for nausea
 - 4.7.1 Non opioid analgesics
 - 9.2.1.1 Oral potassium
 - 9.5.4 Zinc
 - 9.6 Vitamins
 - 10.1.1 Non-steroidal anti-inflammatory drugs
 - 11.8.1 Ocular lubricants and tear deficiency
 - 12.3.4 Mouthwash
 - 13.2.1 Emollients
 - 13.10.2 Antifungal topical preparations
- Acetylcysteine for renal protection when patients are undergoing contrast containing investigations

Section F

Clinical skills

I will not be expected to take samples from patients. Below are list of investigations which I must be able to interpret or request if necessary.

- Blood tests — urea, electrolytes, creatinine, full blood count, APTR (activated partial thromboplastin time ratio), INR (international normalised ratio), C-reactive protein, liver function tests, glucose, drug levels (eg, vancomycin, gentamicin, ciclosporin).
- Microbiology — swab cultures, sputum cultures, blood cultures, line tip cultures, urine cultures, stools (toxins)

I will not be undertaking any physical examinations, or perform patient observations or clinical examinations. I however will be expected to be able to interpret the following observations/examinations in order to prescribe safely:

- Observations — urine output, temperature, blood pressure, pulse, respiratory rate, gastric aspirates, bowel movements, fluid balance, urinalysis, pain scores.
- Physical examination — Glasgow Coma Scale, chest findings (consolidation, fluid, heart sounds), abdominal findings (distension, tenderness, sounds), circulation (skin perfusion/temperature), skin and mucous membranes, urine (pus, concentration, blood, hydration state).

Section G

Audit plans

Clinical supervision. . . .

CPD needs and action plan. . . .

King's College Hospital
NHS Foundation Trust

King's



**Scope of Practice
Template for
Non-Medical
Prescribers**

Raliat Onatade
27 February 2013

An Academic Health Sciences Centre for London

KING'S HEALTH PARTNERS
Pioneering better health for all

King's

Background

- King's is a secondary and tertiary care Trust
- Non-medical prescribers at King's tended to be specialist outpatient practitioners (nurses and pharmacists)
- King's NMPG developed a Trust Scope of Practice Template for Independent Non-Medical Prescribers

King's

Original SoP

- Scope of Practice Statement
 - Settings
 - Conditions
 - Patient Group
 - Exclusions
- Personal Prescribing Formulary
- Clinical Skills
- Audit Plans
- CPD needs and action plan
- Worked well for single speciality prescribing

King's

Opportunities

- Clinical ward pharmacists often find themselves in situations where the ability to prescribe would improve care
- Most specialist pharmacists also have general inpatient clinical responsibilities

The Challenge

Can we develop a scope of practice which is flexible enough to cover specialist and non-specialist inpatient practice?

A. Scope of Practice Statement – 4 situations -

- continuation of therapy
- initiation and discontinuation of therapy, dose/ frequency/ formulation changes
- after discussion with medical colleagues
- discharge medication

B. Any specific aims of prescribing e.g. pain control, peri-operative diabetic management. May be omitted.

C. Guidelines to be followed

(Note: The original slide contains detailed text and arrows pointing from the main points to this detailed text, which is partially obscured and difficult to transcribe fully. The main points are highlighted in red boxes.)

Summary

- The tool has proven to be adaptable and usable in different clinical areas
- Appears to cover all medicines use situations
- We now have examples in surgery, cardiac, renal, liver, haematology – combining specialist and general clinical pharmacy practice
- Will be used in more general areas such as acute admissions
- Currently optimised for pharmacists – we will be promoting it for use by nurse prescribers

D. Mandatory statement regarding record keeping and communication with MDT.

E. Personal Prescribing Formulary – medication which may be initiated without prior discussion with other team members. May be minimal.

F & G. Clinical Skills, Audit Plans, CPD needs and Action Plan.

(Note: The original slide contains detailed text and arrows pointing from the main points to this detailed text, which is partially obscured and difficult to transcribe fully. The main points are highlighted in red boxes.)

Reference

Onatade R and Wong A. Adaptable scope of practice template for hospital pharmacist prescribers. The Pharmaceutical Journal 2012;288:720.

Discussion/Comments/Questions ?

King's College Hospital NHS Foundation Trust
Independent Prescribing Scope of Practice Document

Name: Raliat Onatade Job title: Deputy Director of Pharmacy, Clinical Services

Base: Pharmacy Department

A. Scope of Practice Statement

I propose to undertake prescribing for inpatients and outpatients. The focus of my prescribing will be in, but not restricted to, acute adult medical patients, older people and management of hypertension.

For inpatients, I intend to prescribe in these situations:

1. Continuation of previous drug therapy initiated by GPs or hospital doctors. This would include writing up medications that have been omitted unintentionally on admission clerking and rewritten or transcribed drug charts. This can be carried out in all areas and for all drugs included in the BNF apart from Controlled Drugs to treat addiction and cytotoxics.
2. From my personal prescribing formulary, initiating prescriptions according to the BNF, local policies/ guidelines or local accepted practice. This would include discontinuation of inappropriate drug therapy.
3. Initiating dose adjustments of drugs which may not have been initiated by me, according to the patient's renal or liver function and drug therapeutic levels. Changing formulations and/or dose/frequency of drugs which may not have been initiated by me to enable continued administration. This can be carried out in all areas and for all drugs included in the BNF apart from controlled drugs for addiction and cytotoxics.
4. Prescribing after verbal discussion with a member of the medical or surgical team with responsibility for the patient. This can be carried out in all areas and all drugs included in the BNF apart from controlled drugs to treat addiction and cytotoxics.
5. Prescribing discharge medications when doctors have confirmed that patient is clinically stable for discharge. This can be carried out in all areas and all drugs included in the BNF apart from Controlled Drugs to treat addiction and cytotoxics.

My outpatient prescribing practice will be in the management of hypertension.

B.

Inpatients – Within the limits of my competence, my aim is to provide optimal drug therapy to acutely unwell patients. I will be prescribing in common, non-complex clinical conditions including pain control, anticoagulation, infections, high blood pressure, gastro-intestinal disorders (nausea, vomiting, constipation, diarrhoea, reflux), and alcohol withdrawal. Primary and secondary cardiovascular disease prevention would also be considered according to national and local guidelines. I may also prescribe or discontinue therapy as necessary to avoid or minimise unwanted effects of medication and/or drug interactions. Also, I aim to ensure that pre-existing medication continues to be appropriately managed.

Outpatients – My aim is to ensure patients' blood pressure is controlled and maintained according to guidelines and best practice and in partnership with patients, adjusting and initiating and discontinuing therapy to achieve these aims and minimise unwanted effects. I also aim to minimise associated risk factors and reduce the risk of target organ damage.

I will only prescribe for patients who have been assessed by doctors beforehand and only after reviewing assessments documented in the patient record. Before undertaking any prescribing, I will review patient's biochemistry and haematology results where relevant.

C.

Where applicable, I will adhere to national and local guidelines or where there are no written guidelines I will follow local practice. These include:

- Trust Joint Medicines Formulary
- Guidance on the administration of medications in the perioperative period
- Guidelines for the management of post-operative nausea and vomiting (adult)
- Adult Antimicrobial Pocket guide and Antibiotic policies and guidelines
- Guideline for the use of iodine based radiological contrast agents and the prevention of contrast induced nephropathy
- Anticoagulation policy

- VTE prophylaxis guidelines
- Alcohol withdrawal policy
- Guidelines for the use of PPIs
- NICE Guidelines for the management of hypertension
- Local ‘Morphine First’ policy

D.

Where I have prescribed from my personal formulary or adjusted medication without prior discussion with the clinical team, this will always be documented in the patient record. Other prescribing which may also need to be explained in more detail for the safety of the patient, governance and/or communication to the wider clinical team, will also be noted in the patient record.

E. Personal Prescribing formulary (BNF 65)

- 1.1 Antacids and compound alginates
- 1.2 Prokinetics
- 1.3 Antisecretory agents and Mucosal protectants
- 1.4 Acute diarrhoea
- 1.6 Laxatives
- 1.9 Drugs affecting intestinal secretions
- 2.2 Diuretics
- 2.4 Beta-adrenoceptor blocking drugs
- 2.5 Hypertension and heart failure (anti-hypertensive agents only)
- 2.6 Nitrates, Calcium channel blockers
- 2.8 Anticoagulants – parenteral anticoagulants and continuation of warfarin
- 2.9 Antiplatelet drugs
- 2.12 Lipid regulating drugs

3.4.1 Antihistamines

4.6 Drugs for nausea

4.7.1 Non opioid analgesics and compound analgesic preparations

4.7.2 Codeine, dihydrocodeine

4.10.1 Chlordiazepoxide for alcohol withdrawal only

4.10.2 Nicotine Replacement therapy (nicotine only)

6.5.1 Thiamine, Pabrinex, Vitamin B Complex

9.2.1.1 Oral potassium

9.5.1.1 and 9.6.4 Calcium and Vitamin D for bone protection

9.5.4 Zinc

9.6 Vitamins and oral iron preparations

10.1.1 Non-steroidal anti-inflammatory drugs

11.8.1 Ocular lubricants and tear deficiency

12.3.4 Mouthwash

13.2.1 Emollients

13.10.2 Antifungal topical preparations

Acetylcysteine for renal protection when patients are to receive contrast for imaging investigations

A. Clinical Skills

I will not be expected to take samples from patients. Below are list of investigations which I must be able to interpret or request if necessary.

Blood tests: Urea, electrolytes, creatinine, Full blood count, APTR, INR, C-reactive protein, Liver function tests, blood

Glucose, Drug levels (e.g. vancomycin, gentamicin, digoxin), lipid profile, Urinary Protein/creatinine ratio, d-dimer

Microbiology: Swab cultures, Sputum cultures, Blood cultures, Line tip cultures, Urine cultures, Stools – toxins

Other investigations: Doppler ultrasound (interpretation only),

I will not be undertaking any physical examinations, or performing patient observations or clinical examinations except taking blood pressures. However I will be expected to be able to interpret the following observations/examinations in order to prescribe safely:

Observations: Urine output, temperature, blood pressure, 24 hour blood pressure monitoring, pulse, respiratory rate, gastric aspirates, bowel movements, fluid balance, urinalysis, pain scores,

Physical examination: Glasgow Coma Scale, Chest findings – consolidation, fluid, heart sounds, Abdominal findings – distension, tenderness, sounds, Circulation – skin perfusion/temperature, Skin & mucous membranes, Urine – pus, Concentration, blood, Hydration state

G.

Audit plans	Initially complete prescribing competency log. Audit at 6 months prescribing activity to ensure that it falls within the scope of practice. Audit own prescribing errors and adverse drug reactions following Trust guidelines
Clinical supervision	Consultant/SpR for patient’s relevant clinical team Clinical Pharmacy supervision by Peer Review (Clinical Pharmacy Team Leader for specialty) and Consultant in Charge of hypertension clinic (Prof. Steve Jackson)
CPD needs and action plan	Maintain up to date CPD records as per Royal Pharmaceutical Society guidelines. Attend relevant study days, workshops, educational sessions, courses and conferences Attend medicine management meetings Join local non-medical prescribing groups/forums.

This scope of practice has been agreed by:

Pharmacist IP signature: **Date:**.....

Authorising Consultants Signature: **Date:**.....

Authorising NMPG Signature:..... **Date:**.....

Barts Health Draft Independent Prescribing Scope of Practice

Intention to Prescribe Scope Of Practice Statement				
			DATE	
NAME			ROLE	
SITE			CAG	
Specialty Group			DEPARTMENT/SERVICE	
<i>Please complete form electronically, enlarging fields where necessary, then print and sign.</i>	Evidence of competence to prescribe in this area	Recent CPD supporting prescribing in this area: (inc dates)	Please state guidelines or attach protocols worked to	Signature of assessing Designated Medical Practitioner
Generalist prescribing	<i>Min 2 year practice as clinical pharmacist</i>	<i>Pharmacy Practice Diploma or equivalent GPhC CPD up to date</i>	<i>Barts Health Formulary and Guidelines</i>	
<ol style="list-style-type: none"> 1. Continuation of previous drug therapy initiated by GPs or hospital doctors. This would include writing up medications that have been omitted unintentionally on admission clerking and rewritten or transcribed drug charts. This can be carried out in all areas and for all drugs included in the BNF apart from cytotoxics. 2. Initiating dose adjustments of drugs which may not have been initiated by me, according to the patient's renal or liver function and drug therapeutic levels. Changing formulations and/or dose/frequency of drugs which may not have been initiated by me to enable continued administration. This can be carried out in all areas and for all drugs included in the BNF apart from cytotoxics. 3. Prescribing after verbal discussion with a member of the team with responsibility for the patient. This can be carried out in all areas and all drugs included in the BNF apart from cytotoxics. 4. Prescribing discharge medications when doctors have confirmed that patient is clinically stable for discharge. This can be carried out in all areas and all drugs included in the BNF apart from cytotoxics. 				
Specialist area	Evidence of competence	Recent CPD supporting prescribing in this area: (inc dates)	Please state guidelines or attach protocols worked to	Signature of assessing Designated

	to prescribe in this area			Medical Practitioner
What plans do you have to audit your prescribing?				
Do you receive clinical supervision If so, please give a brief description.				
Have you identified any CPD needs relating to prescribing and if so, how do you plan to address these needs?				
I confirm my support (line manager) Signature Name				
I confirm my support (DMP) Signature Name.....				
I confirm that prescribing under this scope of practice is in line with service strategy Site Director of Nursing for nurses/ head of professional group Sign.....Name.....				
I confirmation that the planned use of medicines is in line with the Trust Formulary Senior Pharmacist Sign.....Name.....				
I enclose evidence of my Qualification detailed under professional registration website <input type="checkbox"/>				

Adaptable scope of practice

Bednall, Ruth (RJE) UHNM <Ruth.Bednall@uhnm.nhs.uk>

Tue 07/11/2017 13:41

To: ONATADE, Raliat (MEDWAY NHS FOUNDATION TRUST) <raliat.onatade@nhs.net>;

📎 1 attachment

clinical excellence PIP presentation.pptx;

Hi Raliat

Please find attached summary of the work we have done over the last 18 months at UHNM in relation to the development of pharmacist independent prescribers.

The reason I am sending this to you is that the key driver for this change was the 'adaptable scope of practice' document and accompanying paper you published in the PJ. I thought it might add evidence to your doctoral application.

That paper was fundamental in changing the perspective of our prescribers on the issue of 'competence' and the pace of change we have experienced has been strongly influenced by this work.

Thank you

Best regards

Ruth

Ruth Bednall MSc MRPharmS

Interim Principal Pharmacist, Clinical Transformation

Please note my working hours are Mon-Wed 9am-3.15pm and Friday 9am-5.20pm

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Developing the role of Pharmacist Independent Prescribers (PIPs) at UHNM

Background

- Pharmacists independent prescribers have existed since 2004
- UHNM has had PIPs since 2006 in limited numbers
- WM regional project to increase number of PIPs to support emergency portals 2014 – funding available for training
- UHNM PIP numbers increased but only 28% qualified prescribers were practicing.

Objectives

- To explore reasons why prescribers were not using their qualification
- To find solutions to the barriers and increase active prescribing
- To extend the role of PIPs within UHNM .

Methods

- A questionnaire was designed and emailed to all PIPS
- Results collated and discussed at a PIP meeting
- Solutions identified and implemented

Outcomes

The issues identified from responses to the questionnaire and the solutions implemented to address these are shown in Table 1.

Table 2 describes the progress made in prescriber activity since implementation of these solutions

Table 1. Reasons for PIPs not practicing January 2016

Barrier	Description	Solution
1.	The need for a second pharmacist clinical check before supply of medicines – most pharmacists work alone in ward environments so prescribing medicines means they then can't order them which delays care	Review of literature, practice and SOPs. Evidence to suggest that PIP prescribing is very accurate and so need for 2 nd clinical check removed from SOP for IP supply – approved by Pharmacy clinical governance and Trust Safe Medicines Groups
2.	Competence/Diagnosis – the training suggests that a PIP should be able to diagnose a condition to be able to prescribe for it ie primary diagnosis – this restricts practice.	Most non-medical prescribers including many PIPs work to secondary diagnosis ie they understand the implications of a diagnosis made by a medical colleague and prescribe appropriate treatment accordingly. If initiating new treatment for previously undiagnosed condition this is appropriate BUT for optimising medicines using secondary diagnosis is sufficient – introduction of Scope of Practice document and change of registration papers
3	Concern that practice would not be supported by consultant colleagues	Perception challenged – do they even know you are a prescriber? Once registration documents completed, emails sent to consultant group informing them of intention and scope of practice – warmly welcomed contribution to patient care
4.	Indemnity insurance – concern regarding level of cover required, cost associated for perceived level of practice	Compared to that required for ANPs Identified range of indemnity providers Added PIP details to all JDs and Trust acceptance of Scope of Practice
5.	Extension of scope of practice – no clear route/opportunity to do this to the level required	Peer review group established Training sessions provided Consultant ward round attendance

Table 2. Progress of PIP activity

Date	No. of PIPs qualified	No. registered with the Trust (%)	No. Actively prescribing (minimum of weekly) (%)
January 2016	14	9 (64%)	4 (28%)
November 2016	16	14 (87.5%)	10 (62.5%)
November 2017	19	2 (89.5%)	17 (85%)

Figure 1. PIP Scope of Practice (adapted from Onatade & Wong¹)

Scope of Practice Statement for Pharmacist Independent Prescribers	
Section A: Prescribing situations	A PIP will deliver care to patients including, but not restricted to medical and surgical patients. Prescribing will be in 4 distinct areas:
	<ul style="list-style-type: none"> • Continuation of medicines previously prescribed by GP or hospital doctors which have been unintentionally omitted during admission or transcription of the medicine chart. • Initiating prescriptions of drugs from their personal prescribing formulary (for which they are competent to prescribe) or according to BNF, local policies/guidelines or local practice. • Medicines optimisation e.g. discontinuation of inappropriate drug therapy, alterations of doses due to changes in renal/liver function, changes to formulations or dose/frequency to ensure continued administration. • Prescribing following discussion with the Consultant and/or registrar responsible for the patient's care, where this is agreed as appropriate drug therapy. • Prescribing medicines for discharge where the doctors have confirmed that the patient is medically stable.
	<i>All of above done for patients in all areas and for all BNF categories except cytotoxic (unless specialist training has been completed)</i>
Section B: Aim of practice	The aim is to optimise drug therapy and ensure safe use of medicines For in-patients this prescribing will only occur after they have been assessed by a doctor and the PIP has reviewed and understood the assessment and management plan and accessed appropriate test results. PIPs will follow national guidelines and where these do not exist local practice will be followed. When prescriptions are initiated without prior discussion with the medical team documentation of this will be made in the notes so that prescribing intentions are clear and communicated to all relevant staff.
Section C: Personal Prescribing Formulary	Each PIP will have a personal prescribing formulary which will consist of medicines in the specialist field in which they trained and those for which their prior professional experience equips them to prescribe. Continued professional development in these therapeutic areas will be demonstrated and extension of this scope of practice will occur alongside documented additional education or training
Section D: Clinical Skills	PIPs are not expected to conduct clinical or physical examinations, take samples or conduct observations for in-patient prescribing. They are expected to be able to request and interpret blood and other tests and observations relevant to the drug therapy being prescribed. For in-patient prescribing they will work to 'secondary diagnosis' ie a diagnosis already established by a medical practitioner. Some individual practitioners may extend their practice to include clinical examination or taking of blood samples but this will be done in conjunction with their DMP and appropriate to their practice setting.
Section E: Specialist Practice	Where a PIP has qualified as a prescriber in a specialist area that results in them delivering direct patient care in a clinic setting they will be expected to perform, request or interpret all relevant assessments necessary to ensure the safe effective and optimal use of the medicines they are prescribing
Section F: Governance arrangements	Annual audits of PIP prescribing will be conducted to monitor quality and safety. CPD records will be submitted as part of their annual PIP process to evidence updating in their field of practice. Clinical supervision will be provided by a designated medical practitioner (DMP) allocated to each PIP, who will observe and review practice on an ongoing basis.

Recent work

Since the implementation of the Scope of Practice and other service facilitators PIPs have been deployed in a variety of roles across the Trust

- Medicines optimization in AMU @ RSUH and other IP wards
- Specialist clinics
- GP practices
- ED clinical practice



PIPs are working in many areas of the Trust, here are a few profiles to describe the range of activities in which they are involved

Kate Webb
Advanced Practitioner,
Renal Medicine.



Kate works within Renal medicine and uses her prescribing both for optimizing medicines use for in-patients, but also runs hypertension clinics and manages the prescribing of Tolvaptan, a high cost drug, for the Directorate in this setting

Isabel Roberts
Advanced Practitioner
Oncology



Isabel works alongside the Oncology team on 201 and 202, prescribing Chemotherapy and supportive treatments for patients with breast and bowel cancer. This service has been essential to the team in maintaining timely access to cancer treatment for our population

Andrew Murray
Advanced Specialist
Pharmacist, Cardiology



Andrew works with the Cardiologists and in addition to his in-patient work on CCU he also supports the Cardiac Rehabilitation team. His pharmacy-led dose titration clinic has been identified as an exemplar model of practice and he is due to share his experiences at a number of national cardiology meetings

Helen Haley
Advanced Specialist
Pharmacist, Paediatrics & GP
Practice



Helen is a paediatric specialist pharmacist but also has a background in anti-coagulation. She has developed a service with a local GP practice, supporting their repeat prescribing workload. In the absence of sufficient GP staff. An 8 week pilot earlier in the year was successful and the service has been commissioned to the end of March due to the financial and quality benefits it demonstrated

Lewis Fisher
Advanced Clinical
Practitioner Specialist



Lewis undertook an 8 week pilot of PIP practice in the ED through the summer months. Data from this demonstrated that a PIP could review a significant range of patients presenting in the ED, facilitate both the admission and discharge of patients to the Trust and support the ED medical and nursing team in the prescribing of complex medicines. He is now conducting an extended pilot of this service through the winter months.

Caroline Slater
Advanced Specialist
Pharmacist, AMU (RSUH)



Caroline works in the AMU@ RSHU and pioneered the new Scope of Practice for PIPs which has led to the progress of this workforce. Her prescribing supports the medical team in acute admissions ensuring that critical medicines are not omitted unintentionally and that medicines use in the acutely unwell patient population is optimised. This service is available 7 days/week when a PIP is working on the unit at the weekend.



Pharmacist Independent Prescribers (PIPs)

Their training and experience – from newly qualified to autonomous practitioner

Pharmacist Independent Prescribers (PIPs) have the following qualifications:

- Undergraduate degree (MPharm or equivalent) (3-4years)
- Pre-registration Pharmacy Professional Training (1 year)
- Postgraduate diploma in Clinical Pharmacy (2 years)
- Independent prescribing qualification from recognised training provider (6 months)

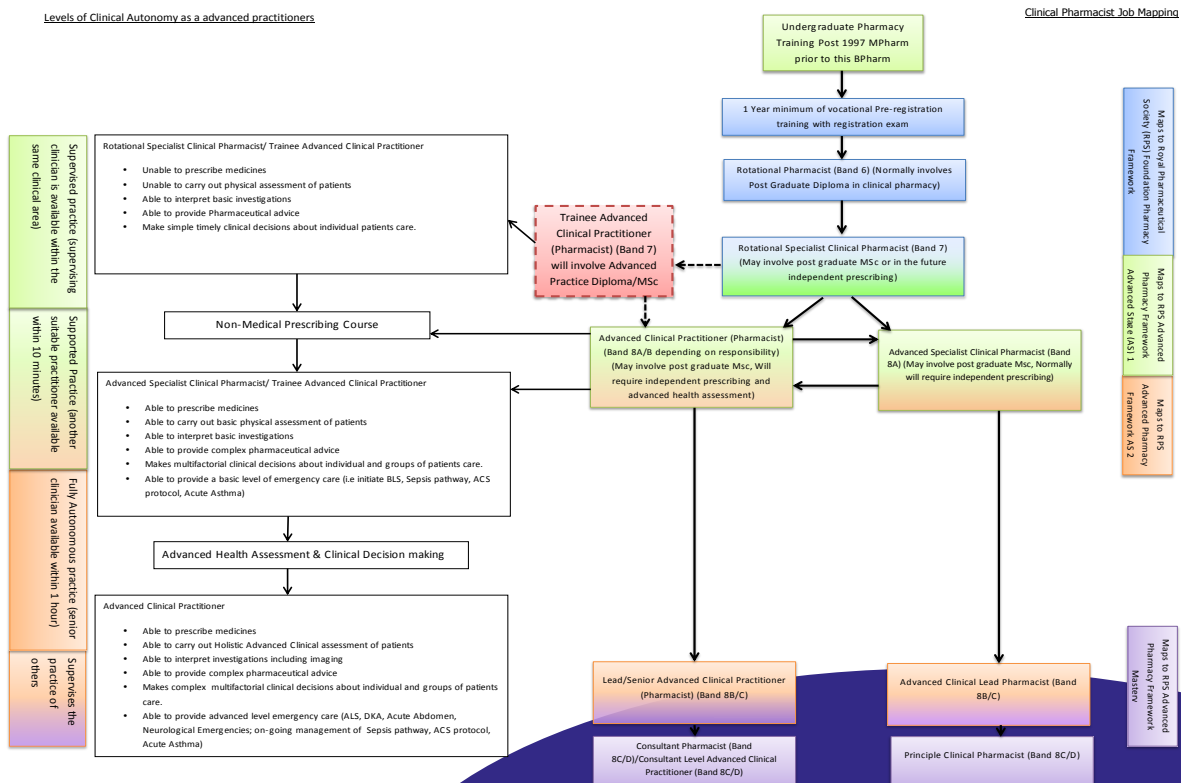
PIPs are registered with the Trust using standard documentation

PIPs adhere to the Trust Scope of Practice for Pharmacist Independent Prescribers (adapted from Onatade & Wong 2012¹)

This allows them to be autonomous practitioners in their specialist field.

In addition some will have advanced health assessment skills

These skills can be mapped against the Royal Pharmaceutical Society Frameworks and lead to autonomous practice



PW19

Improving antimicrobial prescribing
using rapid serial audits and feedback

Talpaert M, Acosta N, Fife A, Onatade R

a patient's condition and giving him/her access to medicines.¹ There is currently no published evidence on how effectively pharmacists are able to prescribe and manage patients with respiratory disease. This quality improvement project was developed to support pharmacist prescribers to review this practice.

AIM

To develop and test a tool that enabled pharmacist independent prescribers (PIPs) to examine their practice in relation to perceived best practice.

OBJECTIVES

- To agree and test with the pharmacist prescribers a dataset for asthma/chronic obstructive pulmonary disease (COPD) patients that would allow the PIPs to undertake self-audit and peer review.
- To analyse data to review the patients' management by PIPs in line with agreed best practice.

METHOD

All primary care trust and chief pharmacists in the South East of England were contacted to help identify practising pharmacist independent prescribers. PIPs working in respiratory clinics were approached and asked to participate on a voluntary basis. The project lead worked collaboratively with the volunteers to agree a dataset specific to asthma/COPD patients. Minor amendments were made following a two-week pilot. All patients with asthma and stable COPD seen in each clinic session were included in the data collection. Data were collected prospectively over six months. Individuals agreed to review their own practice in line with the mutually agreed final dataset by a process of peer review. Patient assessment had to be manageable within the clinic time available.

RESULTS

Four PIPs were recruited (three working in primary care settings and one in secondary care). Following the pilot the dataset was reviewed and amended by the practitioners. Between October 2011 and March 2012, data were collected for a total of 168 patients: 96 with asthma and 72 with COPD.

Of the asthma patients, 36% were at BTS step 4 or 5 and 66% with an asthma control test (ACT) of <19, indicating poorly controlled asthma.² Of the COPD patients, 38% were defined as severe or very severe based on forced expiratory volume (FEV1) rating. In the previous 12 months, 27% of the asthma patients and 24% of COPD patients had had three or more acute exacerbations. Table 1 outlines the findings. Data were provided for most of the agreed parameters. Inhaler technique was discussed with 86% of asthma patients and 88% of COPD patients, with inhaler technique assessed in 75% of asthma patients and 78% of COPD patients. General adherence issues were also discussed in 67–69% of patients. Based on severity of airways disease and patient symptoms, the PIPs reviewed whether the drug therapy was appropriate. In 41% of asthma patients and 19% of COPD patients, it was assessed as not appropriate and changes to therapy were made. A large proportion of these were stepping down or stopping therapy, in line with QIPP (quality, innovation, productivity and prevention) standard targets (of reducing inappropriate high dose inhaled corticosteroid use).³

Access to rescue packs was checked in 85–86% of eligible patients. The flu/pneumococcal status were ascertained in 92% and 99% of asthma and COPD patients, respectively, and referral made in most cases where appropriate. The 75% of asthma patients and 93% of COPD patients identified as smokers were offered smoking cessation.

DISCUSSION

The process of agreeing a dataset prior to data collection allowed individual practitioners to review their practice with respect to national guidance and their peers. Patient assessment and recording of data were found to be manageable within the clinic time available. The results show that PIPs are managing respiratory patients, including those with severe disease and those who are traditionally referred to hospital outpatients. Within the limits imposed by self-audit, they show that PIPs undertake a thorough assessment of patients and amend drug therapy where necessary to improve disease management in line with evidence-based national standards.

Research also demonstrates that up to 50% of patients do not take their prescribed medicines as intended.⁴ As experts in drug therapy, PIPs can bring value-added prescribing services to respiratory management, by ensuring that

Table 1: Results of advice given to patients

Advice	Asthma (n=96)	Data not provided	COPD (n=72)	Data not provided
Inhaler technique discussed	83 (86%)	7	63 (88%)	3
Inhaler technique assessment undertaken	72 (75%)	–	56 (78%)	–
General adherence issues discussed and guidance provided	64 (67%)	1	50 (69%)	1
Drug therapy inappropriate* and amended	39 (41%)	1	14 (19%)	3
Eligible for rescue packs	33	0	29	0
Access to rescue packs checked	29 (85%)	0	25 (86%)	0
Flu/pneumococcal vaccination status checked	88 (92%)	0	71 (99%)	0
Referral for vaccination offered where applicable	14/15	0	10/11	0
Smoking cessation offered where appropriate	6/8 (75%)	1	27/29 (93%)	0

*according to severity of airways disease, national guidelines and patient symptoms

inhaler techniques and general adherence issues are addressed and are well placed to manage patients with co-morbidities. The frequency of patient attendance and the time available for data collection meant that data were only collected once for each patient. Future work would be to extend the data collection period to allow patients' management to be measured over time.

REFERENCES

- 1 Department of Health. Evaluation of nurse and pharmacist independent prescribing. October 2010.
- 2 Thomas M, Kay S, Pike J, et al. The asthma control test (ACT) as a predictor of GINA guideline-defined asthma control. *Primary Care Respiratory Journal* 2009;18(1):41–9.
- 3 National Prescribing Centre. Key therapeutic topics. Version 4.1. April 2012.
- 4 Department of Health. Medicines adherence. NICE CG76; Jan 2009.

NOVARTIS ANTIMICROBIAL MANAGEMENT AWARD 2012

Improving antimicrobial prescribing using rapid serial audits and feedback

Talpaert M, Acosta N, Fife A, Onatade R

King's College Hospital NHS Foundation Trust, London

Between 2003 and 2009, this trust performed annual point prevalence studies (PPS) to examine trends in antibiotic prescribing and adherence to prescribing policies. The 7th and 8th annual PPS conducted in November 2008 and 2009 highlighted three main issues needing to be addressed. In 2009, 33% of the antimicrobial agents prescribed had an indication clearly documented on the drug chart, compared to 34% in 2008. The ratio of patients on intravenous (IV) compared to oral (PO) antimicrobials in 2009 was 51:49 compared to 47:53 in 2008. 21% of prescriptions in 2009 had the duration specified (29% in 2008). In 2010, it was decided to see if more frequent "mini-audits" and regular feedback to individual teams could help improve prescribing. This methodology has been shown to modify prescriber behaviour.¹

OBJECTIVES

- To use a system of targeted serial audits with rapid feedback to improve compliance to local antimicrobial guidelines and prescribing policies
- To achieve the following standards by the end of the audit period:
 - 90% of patients receiving antimicrobial treatment should be treated according to trust policies and guidelines.
 - 90% of antimicrobials prescribed should have the indication recorded
 - 90% of antimicrobials prescribed should have the duration of treatment recorded
 - 95% of patients suitable for IV to PO switch should have switched

METHOD

Drug charts on 17 wards (445 beds) were audited four times between October 2010 and May 2011. The period between cycles was approximately six weeks.

Table 1: Results of all four audit cycles

	1st cycle (Oct/Nov)	2nd cycle (Nov/Dec)	3rd cycle (Jan/Feb)	4th cycle (April/May)	p-value
Total patients	139/445	120/445	124/442	112/443	
Total antimicrobials	183	153	170	165	
Restricted antimicrobials	59/183	59/153	52/170	42/165	
<i>Clinical indication documented on drug chart</i>					
Overall	47.4% (69/139)	48.3% (58/120)	73.4% (91/124)	82.1% (92/112)	p<0.0005
<i>Specialty results for documentation of clinical indication (total number of charts)</i>					
Neurosciences	35% (20)	60% (15)	100%* (18)	64% (14)	
Clinical gerontology	64% (31)	68% (30)	100%* (27)	90%* (29)	
Surgery	37% (35)	14% (35)	32% (34)	60% (35)	
Acute medicine	22%	55%	77% (22)	94%* (17)	
Medical admissions	57% (21)	55% (22)	78% (23)	88% (17)	
<i>Stop/review date (course length) documented on drug chart</i>					
Overall	43.9% (61/139)	51.7% (62/120)	51.6% (64/124)	60.7% (68/112)	p= 0.0006
<i>Specialty results for stop/review date (as a proportion of charts in that specialism)</i>					
Neurosciences	70%	80%	61%	71%	
Clinical gerontology	58%	60%	63%	79%	
Surgery	37%	43%	27%	26%	
Acute medicine	34%	67%	41%	71%	
Medical admissions	23%	23%	78%	94%*	
<i>Restricted antimicrobials not prescribed as per trust guidelines and unclear/inappropriate</i>					
Overall	16.9% (10/59)	6.8% (4/59)	5.8%* (3/52)	4.8%* (2/42)	p = 0.001
<i>Non-restricted antimicrobials not prescribed as per trust guidelines and unclear/inappropriate</i>					
Overall	23.4% (29/124)	21.3% (20/94)	9.3%* (11/118)	0.8%* (1/123)	p<0.0005 p<0.0005
<i>IV to PO switch overdue</i>					
Overall	3.6%* (5/139)	2.5%* (3/120)	0.8%* (1/124)	0.9%* (1/112)	NS, p=0.13

*audit standard met

Wards were chosen based on the results of the 2009 PPS. Each cycle was a snapshot audit on one day. Pharmacy screened all antimicrobial prescriptions for compliance with the standards. Data collected included: ward, name of antimicrobial and whether it was classified as restricted or not, presence or absence of indication and course length on the drug chart or in the notes, and whether the IV/PO switch was overdue according to our criteria. Sensitivities and any advice from medical microbiology were also recorded. After each audit, pharmacy and medical microbiology fed back the results (overall and specialism-specific) to staff in a variety of ways — direct to consultants, pharmacists, infection control leads and clinical governance leads and at clinical directors’ meetings. Consultants were asked to make sure that the information reached their juniors. The chi-squared statistic was used to determine the significance of the improvements between Cycle 1 and Cycle 4. Because these were audits, ethics approval was not required.

RESULTS

Results of all four cycles are displayed in Table 1. The IV/PO switch was within target at the beginning of the audits and stayed that way. The only other targets that were reached overall were the prescriptions of antimicrobials according to guidelines or medical microbiology advice. However, performance on all targets except IV/PO switch increased significantly between the first and fourth cycles.

DISCUSSION

Although most of the standards did not reach their targets, regular, focused auditing with rapid feedback before the next audit cycle significantly improved antimicrobial prescribing. Some specialisms improved more than others. The success of this work led to the adoption of three antimicrobial stewardship key performance indicators (KPIs) onto the trust scorecard — IV/PO switch not overdue, documentation of the stop or review date and documentation of the clinical indication. Data on the KPIs is now collected by junior doctors monthly. The trust and specialism-specific results appear on the scorecard

monthly and are discussed at clinical governance and infection control meetings. The improvements have been sustained and now routinely reach target levels.

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SANOFI DIABETES AWARD 2012

Development of e-prescribing to improve safety of insulin and anti-diabetic medications

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Errors relating to diabetic medication errors are high profile locally and nationally for a number of reasons. National drivers are: the NPSA rapid response alert on safer administration of insulin;¹ the Think Glucose campaign; and the national inpatient diabetic audit.² Local drivers are: a local serious untoward incident relating to insulin that resulted in a coroner’s case; incident reports of hypoglycaemia relating to sulfonylurea, biphasic and rapid acting insulin administration after 10pm; lack of knowledge from medical and nursing staff about insulins and oral anti-diabetes medications; and the trust was set a Commissioning for Quality and Innovation target to demonstrate a 5% reduction in insulin and other diabetic medication errors

In response to the local and national drivers HEFT established a trust-wide multidisciplinary group called DECIDE (Delivering Excellent Care to Inpatients with Diabetes). A decision was made to use the electronic prescribing system that is available across the trust on approximately 80% of the available 1,500 beds to help improve insulin and oral anti-diabetes medication safety.

AIM

To improve patient safety with improved electronic prescribing of insulin and oral anti-diabetes medications.

OBJECTIVES

To demonstrate a 5% reduction in insulin and other diabetic medication errors compared with baseline data from quarter 3 of 2009/2010.

METHOD

A baseline audit using data collected from the electronic prescribing system was undertaken by the DECIDE group. This highlighted three main categories of diabetic medication (insulins and oral antidiabetes medications) errors: *late prescription* — insulin or oral antidiabetes medication prescribed to be administered after 10pm and before 6am (intermediate and long acting insulins were excluded); *late administration* — diabetic medication administered between 11pm and 6am; and *delayed administration* — diabetic medication administered more than 120 minutes after the time it was prescribed to be administered.

To overcome these problems the DECIDE group and the electronic prescribing team undertook a comprehensive review of all diabetic medication prescribing. Diabetic medication protocols were developed to assist prescribers in selecting appropriate meal based timing of administration of diabetic medicines and to help nurses to understand that insulins and oral anti-diabetes medications should be given at meal-times. The insulin device was removed from the prescribing selection list as this was frequently prescribed incorrectly. The pharmacy team as part of the drug history were asked to add a note to the insulin specifying the correct insulin device.

Three new meal based frequencies were introduced to the e-prescribing system, which were breakfast, lunch and evening meal.

Each protocol had a consistent naming convention and was assigned a default administration time in line with one of the new meal based frequencies.

PW20 – Redesigning the discharge medication pathway

PW20a

Using the Consolidated Framework for Implementation Research to evaluate a new discharge medication prescription pathway. Preprint paper.

R Onatade

PW20b

Presentations on redesigning the discharge medication pathway (drug listing)

PW20c

Testimonials and communications regarding drug listing

PW20d

Reports of drug listing implementation work

Article

Using the Consolidated Framework for Implementation Research to Evaluate a New Discharge Medication Prescription Pathway

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Abstract: The effective dissemination and implementation of health service interventions into practice requires a range of strategic and systematic approaches. This paper applies a conceptual implementation framework to the evaluation of a hospital-wide clinical pharmacy initiative, a redesign of the discharge medication prescription pathway. The influencing factors and strategies used to overcome potential negative influences are described and assessed.

Keywords: pharmacists; hospital pharmacy; United Kingdom; discharge prescriptions; prescribing; consolidated framework for implementation research; implementation strategies

Introduction

The effective dissemination and implementation of health service interventions and practice innovations requires a range of strategic and systematic approaches (Haines, Kuruville, & Borchert, 2004; Jacobs et al., 2015). Barriers can be found within the practice environment, individual practitioners and even in patients. There may be obstacles at local, national and organisational levels (Grol & Grimshaw, 2003; Haines et al., 2004). There are also factors that facilitate successful implementation and dissemination. Implementation research aims to promote the systematic uptake of evidence-based practices into the normal activities of healthcare organizations (Rubenstein & Pugh, 2006).

The Consolidated Framework for Implementation Research (CFIR), (Damschroder et al., 2009) was developed to consolidate existing research into implementation science. The authors of the framework assessed nineteen implementation models in order to produce a list of overlapping constructs, which together comprise a comprehensive framework for planning the implementation of an intervention. The CFIR is described as a 'metasynthesis' of other planning and evaluative models and is non-directional in that it does not specify or predict causal relationships. The main intent of the CFIR is to guide implementation and promote the development of theories about what works and what doesn't in different contexts. However, it has most often been used to evaluate interventions and practice changes that have already been introduced. Researchers in South Yorkshire tested the CFIR against eleven diverse healthcare innovations. After applying the Framework's domains and associated constructs to the initiatives, the authors concluded that the CFIR was comprehensive and adaptable enough to capture the complexities of implementing change in various settings (Ilott et al., 2013). Damschroder and Lowery (2013) used the CFIR to assess a weight-management program in different facilities by assigning scores to each construct. They found that several constructs in the framework helped distinguish between facilities with low vs high implementation effectiveness. Rather than rigidly applying the CFIR to an intervention, the authors emphasise that users should assess and adapt each construct in the context of their specific initiative.

In the English National Health System (NHS), hospital pharmacy departments are responsible for dispensing medications for patients to take home on discharge. Delays in obtaining discharge

medication are often cited as causes of patient complaints, staff dissatisfaction and delayed discharge (National Audit Office, 2000, 2002; The Audit Commission, 2001, Care Quality Commission, 2011). Discharging a patient from hospital is a complex process, involving many steps. The supply of medication often occurs during the final stage of discharge and the timing is dependent on several decisions and actions - the decision to discharge, decisions about which medications to prescribe, follow up or monitoring arrangements for medications, writing the discharge prescription, and handing the prescription to pharmacy for dispensing. Additionally, the discharge prescription comprises just one part of the full discharge notification (DN) that is sent to the patient's general practitioner or other primary healthcare provider. The DN also contains clinical information about the patient's stay in hospital. Therefore, traditionally, the discharge prescription is written by the doctor at the same time that he/she writes the clinical information section. The same doctor will have competing demands on his/her time. Completing the DN is therefore often the job that is done last, resulting in the pharmacy department receiving the prescription late. (Care Quality Commission, 2011; National Audit Office, 2000). A slow dispensing process in pharmacy may further compound delays to supplying discharge medication. Because of these complex factors, patients are often waiting for their medication before they can leave the hospital. This has resultant negative impacts on patient throughput, waiting times and patient experience.

In addition to delays caused when discharge prescriptions are not written on time, the quality of discharge prescriptions is known to be poor. Errors and other problems with discharge prescriptions were highlighted in the Department of Health report, 'Building a safer NHS for patients: Improving Medication Safety' (Smith, 2004). The EQUIP study of prescribing errors by junior doctors in hospitals in North-West England detected errors in 6.4% of prescribed discharge medications (items) (Doran et al., 2009). Franklin and colleagues found that 9% of discharge medications from medical admissions and surgical wards were prescribed in error (Franklin et al., 2011). Seden et al (2013) reported that 34.5% of discharge prescriptions contained at least one prescribing error and in a study of prescribing errors in mental health hospitals, 6.5% of discharge medications were associated with an error (Keers et al., 2014). 68% of discharge prescriptions required correction by pharmacists in a recent large UK multi-centre study (Dodds, 2014).

Reports from the literature show that when pharmacists have written discharge medication orders instead of doctors, improvements in quality and efficiency have been noted (Cattell et al., 2001; Chantelois & Suzuki, 2003; Hobson & Sewell, 2004). However this has only previously been implemented on a small-scale, in individual clinical areas, with pharmacists writing relatively few prescriptions (Hobson & Sewell, 2003).

The aim of this study is to use the Consolidated Framework for Implementation Research to examine the factors involved in the implementation of a hospital-wide redesign of the discharge medication prescription pathway.

Methods

Setting: A 1000-bedded secondary, tertiary and quaternary acute teaching hospital in London. The hospital provides surgical, medical and specialist clinical services to local, national and international patients. Each service has designated wards to which their patients are admitted.

The pharmacy department has about 170 members of staff, and provides clinical and dispensing services to in- and out-patients. Inpatient clinical pharmacy services are provided by specialist clinical pharmacy teams (pharmacists and pharmacy technicians), aligned to the corresponding wards.

Description of redesigned pathway: The redesign of the discharge medication pathway involved expanding the routine clinical roles and responsibilities of pharmacists. In the new pathway, the two tasks described above, producing the discharge prescription and writing the clinical details – were unlinked, and pharmacists were given the responsibility of producing the list of discharge medication orders for dispensing, after consulting with the patient, doctor and nursing staff. Doctors retained responsibility for writing the clinical summary and signing off the final list of discharge medications, after dispensing. The redesigned pathway was implemented across the

whole hospital, a change which took place over approximately four years, between 2008 and 2012. Success was mainly measured by the proportion of all discharge medication orders that were written by pharmacists. The initial target was 50%, and performance reached 80% in 2013.

Evaluation: The pathway redesign required changes to the organisation of care, collaborations between disciplines and complex changes in clinical practice. In order to assess the characteristics which enabled the successful change, the influencing factors, and the various strategies employed, were tested against the domains and constructs in the Consolidated Framework for the Implementation of Research (CFIR), (Damschroder et al., 2009). The CFIR comprises five domains and 39 constructs listed below in Table 1.

Table 1. Domains and constructs of the CFIR

Domain	Constructs	Sub-constructs
INTERVENTION CHARACTERISTICS	Intervention Source	
	Evidence Strength & Quality	
	Relative advantage	
	Adaptability	
	Trialability	
	Complexity	
	Design Quality and Packaging	
	Cost	
OUTER SETTING	Patient Needs & Resources	
	Cosmopolitanism	
	Peer Pressure	
	External Policy & Incentives	
INNER SETTING	Structural Characteristics	
	Networks & Communications	
	Culture	
	Implementation Climate	
	Readiness for Implementation	Leadership Engagement Available Resources Access to knowledge and information
CHARACTERISTICS OF INDIVIDUALS	Knowledge & Beliefs about the Intervention	
	Self-efficacy	
	Individual Stage of Change	
	Individual Identification with Organization	
	Other Personal Attributes	
PROCESS	Planning	Opinion Leaders Formally appointed internal implementation leaders Champions External Change Agents
	Engaging	
	Executing	
	Reflecting & Evaluating	

Results

Intervention Characteristics

Source: The innovation was internal to the Trust, and not a regional or national imperative. For pharmacy staff, the initial drive was internal to the pharmacy department. This facilitated the engagement of pharmacy staff. However, clinical pharmacists are part of small, specialty-based clinical teams. Some therefore viewed the change as coming from an external source, imposed by someone who was not part of their team. Additionally, once 50% coverage was reached (50% of discharge prescriptions were written by pharmacists), there was pressure from managers to increase to 75%. This target was therefore imposed externally. The strategy to minimise the potentially negative impact of this external pressure was to give teams complete flexibility in how they implemented the practice change. Each was asked to report on just two performance indicators. These were the percentage of discharge prescriptions written by pharmacists (PTTAs) and the proportion of PTTAs which needed to be changed after being written. Aside from those, pharmacy teams were free to use which ever strategies worked best for them to introduce and monitor the initiative. Adaptability is key to preventing individuals from resisting 'poorly-fitting' interventions (Damschroder et al., 2009). Non-pharmacy staff will have largely viewed the change as externally imposed. However, clinical pharmacy staff are regarded as part of the multi-disciplinary ward team, alongside therapists, nurses and doctors, therefore individual pharmacists led implementation on their wards, to minimise the impression of external imposition.

Evidence and relative advantages: In the early stages, the evidence for the initiative was weak. However as coverage increased, anecdotal evidence of the advantages spread throughout the organisation. The goodwill that this generated encouraged staff to continue to maintain momentum. Ward pharmacists also began to see the advantages to themselves of the change. Thus, evidence was generated and disseminated as the service was rolled out.

Complexity, adaptability and trialability: Redesigning a pathway is inevitably complex and difficult (Grol & Grimshaw, 2003). The use of pilot wards and measured rollout enabled shared learning, and tools were developed which each team adapted for their own use.

Cost, quality and packaging: The benefits of the change to affected individuals, including patients, were relatively easy to explain and make palatable. Pharmacists were the most resistant groups of staff, an issue which is discussed further under 'individual characteristics'. Associated costs were minimal as the role change was largely time-neutral and there were no equipment costs.

Inner and Outer Settings

The characteristics of the inner and outer settings had significant impacts on the success of the new pathway.

Patients needs and resources: The importance of understanding and prioritising patients' needs is a stated value within the organisation, also reflected within the pharmacy department. Therefore the increased benefits to patients from the new way of working was a motivating factor.

Peer pressure: There was no peer pressure from external organisations. However, some competition between pharmacy teams was created by incorporating the performance indicators described above onto the service scorecard. Each teams' results were visible to all, and overall performance was discussed at monthly management meetings. When teams were rolling out the new pathway in their areas, weekly figures were reported. This meant increased accountability for the teams, and the ability to provide rapid, positive encouragement. Monthly figures from the scorecard were reported upwards and were available widely throughout the Trust. This gave the project a high profile. The impact of applying indicators depends partly on the degree with which staff support the programme which is being measured and the existing culture. Additionally, measurement alone can have a negative influence, unless accompanied by a supportive environment and discussions about how improvements can be made (Sheldon, 1998). Therefore the figures were used a basis for discussions on how to improve performance, rather than being the focus of the discussion.

Implementation climate: There was great tension for change within the organisation. Delayed discharge is a continuing cause for concern in an acute hospital, and ideas which improve patient flow are always being sought. Therefore there was compatibility with priorities at organisational

and departmental levels. Individual pharmacists' readiness for change was less assured. Pharmacists took on increased clinical responsibility as a result of the new pathway there was some reluctance which took some time to surmount.

External policy and incentives: Although there was no capacity for extrinsic rewards, the increased respect for, and profile of, the clinical pharmacy service was a significant influence.

Other inner setting facilitators were the stability of leadership within the pharmacy department and the clinical teams, and the established culture, which was reinforced in meetings.

There were negative factors associated with the inner setting which had to be overcome. Ward pharmacists had competing demands on their time, some clinical staff found it difficult to prioritise safe and timely discharges, there was poor discharge planning in some areas and a general lack of clarity from ward and medical teams regarding discharge plans. All pharmacy team members worked towards the goals of promoting good communication on wards, requesting transparency about discharge dates and promoting the concept that discharge planning was not optional. Occasionally, support from senior clinicians (Consultants) was solicited, as they had authority over the junior doctors, to ensure planned discharge dates were communicated to pharmacists.

Characteristics of Individuals

Knowledge and beliefs: One significant obstacle was the ambivalence of individual pharmacists towards their new role. As Greenhalgh et al. (2004) describe, people will develop feelings about innovations, discuss them with others, find meaning in them and challenge them. There was occasional reluctance to take on a task that was regarded as low value and most suitable for inexperienced junior doctors. Alongside careful planning and evaluation, management support is essential to support effective role change (McKenna et al., 2008). Where necessary, support was provided in the form of temporary extra staff to pump-prime the service. Additionally, at initiation of rollout, meetings were held with senior managers and doctors to highlight the value of the service and request their support in taking it forward.

Self-efficacy and individual state of change: The question of whether it is appropriate to take the responsibility of writing discharge prescriptions away from doctors is one which some senior pharmacists are uncertain about, and not all agree with the premise. Hobson and Sewell (2004) also found this, in their survey into the extent of pharmacists writing discharge prescriptions. An important consideration was that the pharmacists had no choice as to whether or not to undertake the new clinical role of writing discharge prescriptions. In their paper exploring the advanced practice roles of community nurses, Aranda and Jones (2008) discuss the need to engage with issues of changing identities and values. This 'identity change' was possibly an underlying factor negatively affecting pharmacists' acceptance of this increase in clinical responsibilities. Research shows that task and professional boundaries are important factors influencing clinicians' attitudes towards role change. These needed to be acknowledged and addressed (Kronus, 1976; Wilson et al., 2002). Strategies to reduce the impact of these individual barriers included – one-to-one meetings with staff to address their concerns, suggesting, leading and supporting small-scale evaluation projects, supporting individual pharmacists to write up and present project results locally and nationally, and visible recognition of successes within the department. Because of the innovative nature of this change, there were no examples or precedents from outside the organisation which could be used to encourage staff. Therefore 'peer opinion leaders' – pharmacists who had successfully rolled out the pathway in their areas - were enlisted to advise their colleagues, motivate and help solve problems. Greenhalgh and colleagues (2004) describe peer opinion leaders as those individuals who exert influence through their credibility and representativeness. These pharmacists were highly appreciated by their non-pharmacy clinical colleagues and their enthusiasm and visibly increased status were helpful in motivating other pharmacists. This is a tactic also suggested by Damschroder and colleagues (2009).

Individual identification with organisation: A positive belief that was continually emphasised was the benefits to patients and the department's core commitment to provide a service aimed at

maximising the quality of patient care. The identification of all pharmacists with this and other departmental values was key to them accepting their expanded role.

Process

Planning: A considerable amount of planning was involved in the pilot stages of the new pathway and also during rollout. Damschroder et al (2009) describe six considerations. In Table 2, some examples of strategies employed are mapped against these considerations.

Table 2

Factors to consider during the planning stage	Examples of actions
Consideration of stakeholders' needs and perspectives	<ul style="list-style-type: none"> External stakeholders' requirements informed all aspects of planning. For example, nurses and doctors were surveyed about their attitudes towards the original and new processes. Each team needed to monitor their progress, therefore they were given standardised data collection sheets and analysis tools so that they did not have to develop their own. To alleviate liability concerns expressed by some pharmacists, a Trust-wide policy and procedures document was written and approved.
Tailored strategies for appropriate subgroups	Different implementation tools were developed for different groups of pharmacy staff, nurses and other ward staff such as administrators, doctors and discharge co-ordinators. These included presentations, posters, meetings, group and 1:1 training.
Appropriate style, imagery and metaphors are used for delivering information	Posters, presentations and training materials all emphasised the benefits for patients and staff, tailored to the groups that were being targeted. A flowchart was used to illustrate the new pathway.
Identification and use of appropriate communication channels	Existing meetings such as ward handovers and junior doctors' training sessions were used. On occasion, senior nurse managers were asked to use their authority to ensure ward nurses supported the new pathway.
Rigorous tracking of progress towards goals and milestones	Performance indicators were tracked and discussed (described above).
The use of strategies to simplify execution	Each team rolled out the new process ward-by-ward, ensuring the service was fully embedded before moving on.

Engaging: As well as peer opinion leaders, change champions and expert opinion leaders could be identified. Change champions are individuals who dedicate themselves to supporting, marketing and driving through an implementation (Damschroder et al., 2009). Expert opinion leaders exert influence through their authority and status (Greenhalgh et al., 2004). The clinical pharmacy team leaders and a few of the more junior pharmacists were change champions. The pharmacy lead with overall responsibility for the project (RO) was both a change champion and an expert opinion leader.

Illot and colleagues also found that the project instigators had dual change champion and opinion leader roles (Illot et al., 2013). The departmental head (Director of Pharmacy) was also an expert opinion leader, as he fully supported the new process, but also used his authority to impose an increased target (from 50% to 75% coverage).

Reflecting and Evaluating: Ongoing monitoring and evaluation helped ensure the new pathway was successful. Teams reported weekly figures against the key performance indicators during the rollout phase. Once performance was steady at 65 – 70% coverage, they were ‘rewarded’ by an increase in the reporting interval to monthly. Some teams conducted audit and evaluation projects pre- and post-rollout. There were also semi-formal assessments of the change management requirements before implementation. In order to maintain success, KPI monitoring has continued. Key messages are reinforced with new staff and the pathway is regularly updated to reflect changing requirements and circumstances.

Two related factors, not described in the CFIR, were identified during implementation of the redesigned pathway. These are the legal and professional considerations when implementing a practice change, especially one which involves role extension. These were not highlighted as barriers by any of the pharmacists undertaking this role change, however it is possible that they were underlying factors.

Discussion

The most significant enabling factors for this particular innovation appeared to be the intervention characteristics (i.e. it resolved an important organisational problem, and the advantages were seen by all affected staff as well as patients), the implementation climate, and certain aspects of the process. Some positive inner setting characteristics were deliberately created, while potential negative influences which had to be addressed were individuals’ beliefs and attitudes regarding the role change. The availability and quality of evidence for the change had very little impact until implementation reached a critical mass.

The method used in this study for evaluating a practice change has some limitations. Other studies employing the CFIR have used interviews to elicit the significant factors involved in implementation (Damschroder & Lowery, 2013; Illot et al., 2013). Using independent researchers to assess the interview data has the advantage of improving objectivity. However, there is still the risk of bias as the interview data is by necessity obtained from personnel who were intimately involved in the change. In this study, the author evaluated work that she had been responsible for leading. The loss of objectivity is a possible weakness.

Conclusion

The CFIR was an effective tool for reviewing the theoretical and pragmatic factors involved in effective implementation of a redesigned pathway. Some of these factors can be found in other models (Greenhalgh et al., 2004; Rycroft-Malone et al., 2002), but the CFIR was developed to combine all in a single comprehensive tool. Researchers in other settings may also find that legal and professional issues are relevant factors. This is a possible gap in the framework and needs further review.

In common with other researchers, CFIR has been used to learn lessons from the successful change to a service pathway. However, the framework was originally designed to support the planning for a new practice, service or intervention, by providing a list of factors to be considered and addressed. We believe the tool is sufficiently comprehensive to add value if used during the pre-implementation stages of pharmacy services.

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King's College Hospital NHS Foundation Trust

King's

Trust-wide redesign of the discharge medication pathway

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Setting

- 1000 bed acute secondary/tertiary care Teaching Hospital
- 2,600 – 3,000 discharges a month
- Discharge prescriptions (TTAs) are prescribed electronically
- 78 pharmacists; 50 clinical pharmacists
- 10 Med Management Pharm Technicians
- 'Ward based' TTA screening
- Over 50% of TTAs (30% – 100%) needed pharmacy corrections

King's

The issue...

"If we try and get a doctor to do a TTA it just takes ages."

Staff nurse

"Doctors will not do it... We just want the medication sorted and the doctors drag their feet. ...A TTA would be sent to pharmacy at 5pm by the nurses, it would get to pharmacy late, everything is then just delayed."

Ward manager



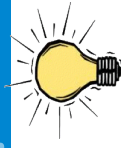
"When a patient is ready to go home, they are no longer a priority for us, we have sick patients to admit, look after and sort out. We can't prioritise discharge."

Junior Doctor, Medical Ward



"I don't really care about the process of getting my medication; I have other issues to worry about. All I care about is that when I am ready to go home that my medication is there."

Patient, Renal Ward



- Why do doctors have to write the TTAs?
- Why not do them properly first time round?
- Re-invest the time spent chasing and correcting TTAs
- Re-engineer
 - make writing the discharge medication list ('drug list') a clinical role for the pharmacist
 - Ward/clinical pharmacist has responsibility for medication issues from admission to discharge



- Pharmacist is told about discharges during routine ward visit
- Pharmacist consults with doctor, nurse, patient - writes drug list
- Medication dispensed, sent to ward with instructions not to give to patient until final paperwork completed
- Doctor checks drug list, completes clinical details on discharge notification, prints, signs



“The drug list is done by the pharmacist, it’s printed and the doctor signs it. It reduces patient complaints.”

“Transforms our discharge processes. A high quality service that improves the patient’s pathway and speeds up discharges.”

Ward Managers



How did we do it?

- Led by Deputy Director of Pharmacy, implemented by lead pharmacists
- Gradual roll-out
 - Shared learning, best practice, documentation
 - Involved senior and junior doctors, ward managers, ward nurses, ward clerks, dispensary staff, discharge co-ordinators
 - Started small – 30%, 50%, 75%
 - Clear protocol, posters, presentations
- Regular ward meetings during roll-out



Where are we now

- Expanded clinical responsibility
- Trust-wide, all clinical pharmacists
- Not a discharge or transcribing service
- Discharge medication pathway irreversibly changed
- Average (mean, median) time to write a drug list – 9 minutes
- Over 80% of weekday discharge prescriptions are written by pharmacists
- 97% of TTAs ready by the required time

- Performance and quality targets. Weekly monitoring during roll-out
 - Drug lists written 24 hrs before discharge
 - All drug lists will have medication on the ward the same day
 - Target amendment rate for drug lists after dispensing = not above 25%
- Several service change and audit projects - student projects, UKCPA abstracts
- Minimal funding required; largely time-neutral - re-allocation of resources



- **Not at weekends or out of hours yet (except on PTWR)** this is a clinical service and should be performed by a pharmacist who knows the patient
- **No pharmacist second-check** audits have shown this is not needed
- **Pharmacists with fewer than 12 months experience do not write drug lists**



Impact

- Daily clinical workload more easily planned
- We are fully involved in plans for discharge
 - If we are not on the ward round, doctors come and tell us about plans for medication
- Benefits seen across the department
 - Few late TTAs
 - High profile, highly valued service within the Trust
- Unexpected benefits
 - Enhanced clinical decision making skills
 - Seamless process between wards and pharmacy



Outcomes

	Pharmacist-written	Doctor-written
% pts discharged before noon	58%*	11%*
% pts waiting for discharge medication after 12 noon	0%*	53%*
Afternoon discharge time	2.30pm*	5pm*
Error rate	2.8%*	53%* (68%)
Medication changes fully recorded when required	76%*	27%
Drug lists changed after writing – additions and deletions (target: less than 25%)	15%*	Not applicable

*Local audits | Dodds L.J. Pharmacist contributions to ensuring safe and accurate transfer of written medicines-related discharge information EJHP 2014

“It’s amazing ... When pharmacists do drug lists they pick up so many medication issues that we have not even thought about and they deal with it... They know what the pre-admission medication was, which of the medicines have stopped or changed. They recheck all of this and remind us of the medication that maybe we forgot to restart or review.”

Junior doctors

Challenges

- May need funding – depends on baseline
- Discharge prescribing is often not valued - pharmacists can be resistant!
- Drs tell what you need to know when they realise the advantages for them
- Needs careful implementation to be safe
- Roll-out can be slow
- Are we de-skilling doctors?

The de-skilling question

- We have taken a job away from doctors
- We do it better
- We have improved a system which was otherwise done poorly
- Discharge is very important to patients – we help improve their experience

“You can't de-skill people who never had the skill in the first place.”

Consultant, Medicine

Future Work

- Embedded in our clinical pharmacy service – can use to further improve discharge counselling
- Implementation has started at our second, newly-acquired hospital
- 7 day service in acute medicine over winter – awaiting funding approval to continue
- Weekend drug-listing has been requested

Finally

“I must say, it's much faster at King's than other places. When you go to other hospitals you have to wait around on the ward all day for your medicines to come up, or they stick you in those uncomfortable rooms with chairs to wait all day. You would think that they want the beds the way the NHS is.”

Patient, Surgical Ward (unprompted!)

Thank you for listening

Thanks to pharmacists at King's College Hospital NHS Foundation Trust for embracing this new role, enabling us to further improve patient care and demonstrate the value of clinical pharmacy



THE Clinical Pharmacy CONGRESS AWARDS 2014

RALIAT ONATADE

has been selected as a finalist in the Innovation of the Year category

Leora Shapiro
Leora Shapiro, Director
25th April 2014

Christophe Cretz
Christophe Cretz, Chairman
25th April 2014

CPPE
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Learning from other disciplines – The use of Implementation Science to evaluate a pharmacy practice initiative

Railat Onatade
BPharm (Hons), MSc. (Clinical Pharmacy), MSc. (Clinical Risk Management), MRPharmS,
Deputy Director of Pharmacy, Clinical Services
King's College Hospital NHS Foundation Trust
London, UK

Aim

The main aim of this session is to demonstrate the use of Implementation Science in describing and evaluating an organisational-wide pathway redesign and practice change introduced by the Pharmacy Department at King's College Hospital NHS Trust (KCH) – the writing of discharge medication lists by pharmacists



Overview

- ❖ Background and description of practice initiative
- ❖ Implementation Science and examples of Implementation Frameworks
- ❖ Application of the Consolidated Framework for Implementation Research to the practice initiative



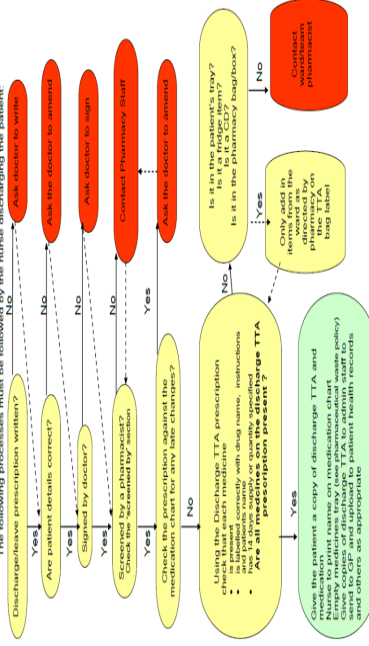
Background

- ❖ KCH is a 1000-bed secondary and tertiary teaching hospital in South London, UK
- ❖ 2,800 to 3,000 admissions and discharges per month
- ❖ Several specialities including haematological malignancies, transplantation, viral hepatitis, HIV, neurosciences, foetal medicine, major trauma, hyperacute stroke unit, cystic fibrosis
- ❖ Pharmacy department has approximately 170 staff, 80 pharmacists
- ❖ Comprehensive ward and outpatient clinical pharmacy services - with Specialist Clinical Pharmacy Teams
- ❖ Electronic prescribing and medicines administration in non –critical care areas



The Problem

Flowchart of the procedure for subacute patients with discharge/leave prescriptions must be followed by the responsible nurse discharging the patient.



© Education, Medication, Liaison & Discharge Pharmacy Training Unit
November 2009 (last updated November 2011)

North East London NHS Foundation Trust Pharmacy Service 2011

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The Problem

"Doctors will not do it... We just want the medication sorted and the doctors drag their feet ...A discharge prescription would be sent to pharmacy at 5pm by the nurses, it would get to pharmacy late, everything is then just delayed."
Ward manager

"When a patient is ready to go home, they are no longer a priority for us, we have sick patients to admit, look after and sort out. We can't prioritise discharge."
Junior Doctor, Medical Ward

The Solution

- ❖ Redesign the pathway
 - Pharmacist writes the medication list, after consulting with patient, doctor, nurse
 - Doctor writes the clinical summary, checks the medication list and signs
 - Patient is discharged in a timely manner

Ward Manager: *"Transforms our discharge processes. A high quality service that improves the patient's pathway and speeds up discharges."*

Doctors: *"It's amazing... When pharmacists do drug lists, they pick up so many medication issues that we have not even thought about and they deal with it... They know what the pre-admission medication was, which of the medicines have stopped or changed. They recheck all of this and remind us of the medication that maybe we forgot to restart or review."*



Why use Implementation Science?

- ❖ The effective dissemination and implementation of health service interventions into practice requires a range of strategic and systematic approaches (WHO, 2004)
- ❖ Implementation science is the discipline that promotes SYSTEMATIC use of methods or techniques to enhance the adoption, implementation, and sustainability of a clinical programme or practice
 - Formative and summative evaluations
 - Allows assessment of the extent to which implementation is effective in a specific context
 - Optimise intervention benefits, prolong sustainability of the intervention in that context
 - Promotes dissemination of findings into other contexts



Implementation Frameworks (1)

PARIHS – Promoting Action on Research Implementation in Health Services

- ❖ Conceptual
- ❖ Successful Implementation is a function of Evidence, Context and Facilitation and their inter-relationships $SI = f(E,C,F)$
- ❖ Each has sub-elements e.g. Context: receptive context, organisational culture, leadership and evaluation
- ❖ Assess the status of each element for whether it will have, or has had, a low or high effect on implementation
- ❖ Implementation is more likely to be successful when
 - Evidence is well-conceived and designed and there is consensus
 - Context is characterised by role clarity, transformational leadership and multiple sources of information on performance
 - Appropriate facilitation mechanisms are instigated

Rycroft-Malone et al., Qual Saf Health Care 2002;11
 Helfrich et al. Implementation Science 2010, 5:82



Implementation Frameworks (2)

RE-AIM

- ❖ **Reach:** The proportion and representativeness of the persons who receive, participate in, or are affected by, the programme
- ❖ **Efficacy/Effectiveness:** Measure of impact and success in achieving the programmes goals, including outcomes
- ❖ **Adoption:** Proportion and representativeness of organisations/wards/units who take up the intervention
- ❖ **Implementation:** Degree of fidelity to the components of the intervention
- ❖ **Maintenance:** Level of sustained use (organisational) and sustained participation (individual)

www.re-aim.org



Programme goal: to increase medication error reporting, by implementing a new web-based reporting tool and local feedback systems

Use RE-AIM to evaluate

Reach:

Proportion of errors which are reported using the tool; are they representative of all error types? Proportion of staff members using the tool

Effectiveness:

Increased number of reports, staff satisfaction with new system

Adoption:

Participation rate - proportion of units or wards who have used the tool

Implementation:

Is local feedback happening regularly?

Maintenance:

6 - 12 months later – how well is the new system working?



Consolidated Framework for Implementation Research

- ❖ Over-arching, 'meta-framework', non-directional
- ❖ **INTERVENTION CHARACTERISTICS:** Intervention Source, Evidence Strength & Quality, Relative advantage, Adaptability, Trialability, Complexity, Design Quality and Packaging, Cost
- ❖ **OUTER SETTING:** Patient Needs & Resources, Cosmopolitanism, Peer Pressure, External Policy & Incentives
- ❖ **INNER SETTING:** Structural Characteristics, Implementation Climate, Networks & Communications, Culture, Readiness for Implementation
- ❖ **CHARACTERISTICS OF INDIVIDUALS:** Knowledge & Beliefs about the intervention, Self-efficacy, Individual Stage of Change, Individual Identification with Organization. Other Personal Attributes
- ❖ **PROCESS:** Planning, Engaging, Executing, Reflecting & Evaluating

Damschroder et al., Implementation Science 2009, 4:50



Back to our practice initiative...

Pharmacists write discharge medication lists instead of doctors

- ❖ Intervention Characteristics:
Internal to our organisation – not externally imposed, flexibility on mode of implementation, weak external evidence, but roll-out generated positive internal anecdotal evidence, all participants experienced benefits
 - ❖ Inner and Outer Settings:
Core value - Prioritising patients needs; no external peer pressure so competition between teams created using performance scorecards; performance reported upwards - high profile; increased respect for and appreciation of clinical pharmacy service
- (Percentage of discharge orders written by pharmacists, percentage of pharmacist discharge orders requiring a change)*
- Negative factors: competing demands, perceived low status of the task, lack of clarity regarding discharge planning



CFIR continued...

- ❖ Individuals – Resistance from pharmacists – increased workload, ambivalence; 'junior doctors' job'; not able to decline; changing identities and values; passive resistance; professional and ethical objections
- ❖ Process – stakeholders' needs; tailored strategies; tailored materials; communication channels; gradual roll-out; tracking via performance indicators
- ❖ Engaging – change champions, opinion leaders, consensus from team leaders on moving forward, reward for reaching target (move to monthly reporting from weekly)
- ❖ Evaluation – Continuous
 - percentage of discharge orders written by pharmacists- 30%, 50%, 70% - now 80%
 - percentage of pharmacist orders requiring a change : 10 – 15%
 - Risk: 509 medication lists (4258 orders) assessed;2% of lists, 0.2% of orders had an error, none likely to cause harm



Takeaway messages

- ❖ Pharmacists writing discharge medication orders is safe, efficient and highly beneficial to patients, staff and the organisation
- ❖ Redesigning the pathway required changes to practice, culture, organisation of care, and acknowledgement of ethical and professional dilemmas
- ❖ Implementation science and implementation frameworks provide a conceptual, structured and systematic method of planning and evaluating practice changes, ensuring effective translation of research into practice



Thank you for listening

ralliat.onatade@nhs.net

"I must say, it's much faster at King's than other places. When you go to other hospitals you have to wait around on the ward all day for your medicines to come up, or they stick you in those uncomfortable rooms with chairs to wait all day. You would think that they want the beds the way the NHS is."

A patient





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Proactive medication error avoidance

24 May, 2016 10:40 AM | By [Laurence Goldberg](#), [Christine Clark](#)

More than 20,000 delegates attended the 50th Midyear Clinical Meeting of ASHP in New Orleans. Key topics included medication safety outside the pharmacy, virtual cleanrooms and miniaturised, on-demand drug manufacture

Laurence Goldberg
Editorial Consultant, HPE
Christine Clark
Editor, HPE

nkr

Any adverse event involving medication in a hospital is commonly considered to be "a pharmacy problem" and yet many events take place outside the pharmacy where pharmacists may have little influence over what happens, said Natasha Nicol (Director of Global Patient Safety Affairs, Cardinal Health, USA). There are about sixteen steps involved in getting medications from the pharmacy to the wards, each of which represents a potential error point, she continued.

Adverse events are rarely due to a single person or an isolated action but time is often wasted looking for a cause when it would be better to get the whole story. Other common mistakes include assuming it is the manager's duty to fix events, focussing preferentially on "big, bad, ugly" events and remaining reactive – waiting for something to happen and then trying to fix it, rather than pro-actively tackling risks, she said. It is important to understand the roles of human error and system design.

You get the results that the system is designed to deliver. Although safety is almost always a core value in a hospital's mission, the drive for productivity often conflicts with safety activity and factors such as fatigue, distractions and stressful environments can influence individual behaviour, said Dr Nicol. As a director of pharmacy, she had told her staff that men did not need to wear ties and women did not need to wear skirts because physical comfort at work would help them to perform at their best.

Dr Nicol recommended that pharmacists should focus on prevention strategies. Predictive assessment, instead of reactive approaches, would be really helpful, she said. It is also important to understand people's motivations and to ensure that policies and procedures are workable in practice. In addition, they should avoid common mistakes, such as trying to investigate everything, viewing any deviation as a violation and failing to ask tough questions to avoid conflict. She suggested that one useful approach would be to use 'triggers' such as heavy use of reversal agents including naloxone, vitamin K, protamine and glucagon, to identify problems.

Regarding IT, she said that nurses tend to 'drift' from barcode medication administration (BCMA) and devise 'workarounds'. However, they only do this "because we gave them a poor system. Sometimes the workaround is a better way – so keep an open mind", she cautioned. Similarly, there should be constant engagement with physicians to monitor electronic prescribing systems and regular reviews of library compliance with smart pumps. As a way of getting started, Dr Nicol recommended visiting one or two departments to find out how they work. "Do not wear a suit or clickety heels and say you are there to learn not to check", she advised.

Medication use processes

A fatal error in a labour and delivery unit in which a bag of bupivacaine intended for epidural administration was accidentally administered by the intravenous route served to illustrate the impact of shortcomings in the medication use processes, according to Matthew Grissinger (Director, Error Reporting Programs, Institute for Safe Medication Practices, Philadelphia, USA). Although a barcode administration system had recently been introduced the patient was not wearing an identity band, the anaesthetists were intimidating and the nurses were pressured to prepare bupivacaine injections before the orders were written.

In addition, the nurse was tired, having worked two consecutive eight hour shifts followed by a short break, and was distracted by arguments between the 16-year-old patient's mother and boyfriend. In spite of an exemplary record, she was charged with criminal neglect and faced a possible six-year prison sentence and \$25,000 fine. The problems were not directly related to the medication but to the whole system, said Mr Grissinger.

Some 15% of adverse drug events are due to 'wrong drug' errors, with other problems accounting for the remaining 85%. One common

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problem area relates to the documentation of allergies. It is important to find a description of the reaction that led to the diagnosis of an allergy because the label is often applied inappropriately, for example, a digestive upset with a penicillin can be incorrectly documented as a penicillin allergy.

Another common problem is failure to record the patient's weight accurately with consequent overdosage – and this can be a serious issue, for example, with heparin dosing where the risk of bleeding can be increased. Although no drugs are dosed by body weight in pounds, in the USA (and two other countries) patients are still routinely weighed in pounds. A surprising number of errors have occurred, not because of calculation errors, but because the numerical value of the weight in pounds was used in the milligram per kilogram formula. In addition, nurses sometimes estimate body weights but patients are better at estimating their own weight than either doctors or nurses, said Mr Grissinger.

Turning to drugs in anaesthetic practice, Mr Grissinger pointed out that labels are often limited or absent when physicians prepare injections. This issue appears regularly in the top five problems identified in Joint Commission inspections of office-based surgery settings, he noted. He urged pharmacists to take time to observe how medicines are handled and administered on wards, and also to consider areas such as radiology where they might not yet have visited.

Opioid safety

Pain management is an area of IV medication use that can pose significant risks. Confusion between morphine and hydromorphone was so frequent that eventually hydromorphone had to be removed from the electronic prescribing system, said Rita Shane (Chief Pharmacy Officer, Cedars-Sinai Medical Center, Los Angeles, USA). Monitoring patients for sedation is essential during opioid use, especially for patients receiving patient-controlled analgesia. End-tidal carbon dioxide measurement is the 'gold standard' but this is difficult to implement as patient acceptance can be problematic.

Pulse oximetry can be very effective if linked to a nursing alert (to warn the nurse of falling oxygen saturation), according to a Cochrane review but it is unhelpful if the patient is receiving oxygen, said Dr Shane. Sharon Steingass (Director, Innovation and Communication, The Ohio State University James Cancer Hospital, Columbus, Ohio) commented that the modified early warning (MEW) score which combines pulse oximetry, vital signs and level of consciousness, provides a good early warning sign and can be built into electronic systems.

Cleanroom simulation

Use of a virtual interactive cleanroom improved pharmacy students' knowledge of aseptic procedures considerably, according to John Hertig (Associate Director, Center for Medication Safety Advancement, Purdue University, Indiana). The web-based Virtually Interactive Cleanroom (VIC) works much like a video game. It allows students to undertake a range of activities including handwashing and gowning, compounding of injectable doses and disposal of waste.

This "makes students feel more comfortable when faced with the real thing", said Dr Hertig. The software was translated into Mandarin and tested in five Chinese hospitals in Shanghai. The hospitals compounded an average 5000 doses per day and had significant training needs. The results showed that age and gender were important predictors of acceptance with young men liking it best. The technology was a useful adjunct to didactic teaching and had considerable potential for continual competency assessment, he said. It is essential for the simulators to look like the actual working environment. Feedback from the users indicated that they wanted more real-time feedback and a multi-player version.

Discharge medication

Implementation science, which provides a systematic method of planning and evaluating practice changes, was used to evaluate the impact of redesign of the discharge medication pathway at Kings College Hospital (KCH) in London. Raliat Onatade (Deputy Director of Pharmacy, Clinical Services, KCH NHS Foundation Trust) described how KCH handles up to 3000 admissions and discharges each month, but junior doctors prioritise sick inpatients over discharges and so preparing the discharge prescription is frequently delayed. The discharge pathway was redesigned such that discharge medication lists were prepared by pharmacists, in consultation with the patients, nurses and doctors.

Doctors then write the clinical summary and check and sign the medication list. The consolidated framework for implementation research was used to ensure that all organisational, professional and cultural elements of the change were fully addressed. One doctor commented, "It's amazing... when pharmacists do drug lists, they pick up so many medication issues that we have not even thought about and they deal with it..."

On-demand, miniaturised drug production

Methods for small scale, point-of-use manufacture of drugs have now reached an advanced stage according to scientists from the Massachusetts Institute of Technology. The Battlefield Medicines Programme of the Defense Advanced Research Projects Agency (DARPA) set out to develop methods for miniaturised manufacture of drugs – both small molecules and biologics – in response to specific battlefield threats and medical needs.

(DARPA is an agency of the US Department of Defense responsible for the development of emerging technologies for military use). Conventional drug manufacturing and logistics are relatively slow processes and not sufficiently fast or flexible to respond to urgent needs, explained Tyler McQuade (program manager, DARPA). Once developed, the new methods could have other applications such as tackling drug shortages and responding to emergency situations, he added.

As part of this initiative, two linked projects have been developed - the 'Pharmacy on Demand' (PoD) programme for small molecules and the

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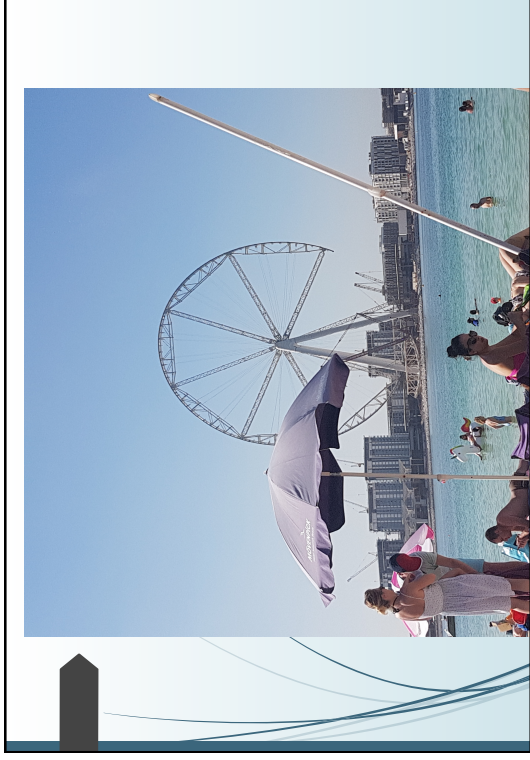
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Improving Discharge Medication Prescriptions

Ralliat Onatade
Interim Deputy Chief Pharmacist. Lead for Clinical Pharmacy Practice, Education & Training and Research
Barts Health NHS Trust
November 2017



Improving ~~Transfer of~~ Discharge Medication ~~Prescriptions~~ Prescriptions

Ralliat Onatade
Interim Deputy Chief Pharmacist. Lead for Clinical Pharmacy Practice, Education & Training and Research
Barts Health NHS Trust
November 2017

Session Info

- ❖ Why is it important to ensure discharge prescriptions are of high quality
- ❖ Evidence and drivers
- ❖ Practical examples of how the pharmacy team can help improve this aspect of patient care

Back in 2008...

Aims: to improve the discharge experience, reduce delays, increase patient throughput

- Improving the TTA production process - Streamlining the TTA process to ensure timely discharge and reduce frustrations and delays
- Pilot of ward discharge medication labelling - Assessing the impact of ward labelling of discharge meds on length of time taken to complete a TTA, the time TTA medications were

Now...

- ❖ Flow
- ❖ Transfer of care
- ❖ Transfer of information
- ❖ Community pharmacy referrals
- ❖ Discharge medication reconciliation

Why?

- ❖ Safe, effective discharge is still an NHS priority
- ❖ Timely discharge is key to minimising waiting times for beds or care - the flow of patients between staff, departments and organisations along a pathway of care

Principles

- ❖ If you can do it better – do it!
- ❖ The number of tasks in a process affects the quality of care – reduce the steps or 'handoffs', remove 'waste' or low-value steps
- ❖ The most reliable and sustainable way to improve both quality and cost is to systematically redesign processes of care

Improving patient flow. The Health Foundation, 2013

Evidence and drivers

Surgical and nursing staff identified writing discharge prescriptions as the most valuable service provided by the PAC pharmacist

The impact of the pharmacist on an elective general surgery pre-admission clinic
 Helen L. Hick, Philip E. Chasdy, David J. Wright and Jonathan Slick

Abstract The impact of the pharmacist on an elective general surgery pre-admission clinic was evaluated. The pharmacist's role was to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling.

Introduction The pharmacist's role in the pre-admission clinic is to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling.

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Results The pharmacist's role was to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling.

Conclusion The pharmacist's role was to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling. The pharmacist's role was to ensure the patient's safety and to provide education and counseling.

14.1% of patients experienced discrepancies

Five medication classes accounted for 50% of discrepancies – anticoagulants, diuretics, ACEIs, lipid-lowering agents, PPIs

14.3% of patients who experienced discrepancies were rehospitalised at 30 days, of which 6.1% of patients were rehospitalised within 7 days

Evidence and drivers

Accuracy of medication documentation in hospital discharge summaries: A retrospective analysis of medication transcription errors in manual and electronic discharge summaries
 Joanne Collins, John Mitchell, Julie Li
 The University of Derby, Derby, UK

Abstract Background Medication errors in hospital discharge summaries have the potential to cause harm to patients. The aim of this study was to assess the accuracy of medication transcription in manual and electronic discharge summaries. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital.

Methods The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital.

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Conclusion The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital.

12% to 13% of summaries contained medication errors

Similar for handwritten and electronic

Drug types were – cardiovascular, bronchodilators, laxatives, CNS agents

Medication omission was the commonest error

Original Article

Pharmacist contributions to ensuring safe and accurate transfer of written medicines-related discharge information: lessons from a collaborative audit and service evaluation involving 45 hospitals in England

Linda Todd

Background: Medication errors (MEs) resulting in patient morbidity or even death, sometimes of increased or if preventable, are a significant public health problem. Written medicines-related discharge information is a key component of patient safety and needs to be fully and accurately transferable. A collaborative audit and service evaluation involving 45 hospitals in England was conducted to assess the quality of written medicines-related discharge information and to identify areas for improvement.

Methods: A collaborative audit and service evaluation involving 45 hospitals in England was conducted to assess the quality of written medicines-related discharge information and to identify areas for improvement. The audit and service evaluation was conducted over a 12-month period. The audit involved a review of written medicines-related discharge information from 45 hospitals. The service evaluation involved a review of the written medicines-related discharge information from 45 hospitals. The audit and service evaluation was conducted over a 12-month period.

Results: The audit and service evaluation identified several areas for improvement. The most common errors were related to the accuracy of the information and the clarity of the instructions. The audit and service evaluation also identified several areas for improvement, including the need for better training and education for pharmacists and other healthcare professionals involved in the transfer of written medicines-related discharge information.

Conclusion: The audit and service evaluation identified several areas for improvement in the transfer of written medicines-related discharge information. The most common errors were related to the accuracy of the information and the clarity of the instructions. The audit and service evaluation also identified several areas for improvement, including the need for better training and education for pharmacists and other healthcare professionals involved in the transfer of written medicines-related discharge information.

- Only 32% of prescriptions were legal and unambiguous
- Pharmacists made 1.3 contributions per prescription
- 33% averted moderate or severe harm
- Handwritten and electronic rates were similar
- Pharmacy screened prescriptions for

Specialist Pharmacy Service

Collaborative audit across England on the quality of medication related information provided when transferring patients from secondary care to primary care and the subsequent medicines reconciliation in primary care

Final Report

- 46 CCGs, 1 454 patients
- Allergy status – 76%
- Formulation – 60%
- Ongoing instructions – 73%
- Reason for initiation – 50%
- Reason for stopping – 57%
- Reason for dose changes – 39%

Emergency Care Improvement Programme

Rapid Improvement Guide to:

Optimising medicines discharge to improve patient flow

This guide provides an overview of the key principles of medicines discharge. It is intended to be used by pharmacists and other healthcare professionals involved in the transfer of medicines-related discharge information. The guide covers the following areas:

- Patient safety and patient flow
- Medicines-related discharge information
- Patient safety and patient flow
- Medicines-related discharge information
- Patient safety and patient flow
- Medicines-related discharge information
- Patient safety and patient flow
- Medicines-related discharge information

- Consider the need for medicines at discharge
- Start preparing for discharge at admission
- Reduce processing time – think minutes, not hours
- Separate streams for urgent and non-urgent work

Research Article

The incidence and severity of errors in pharmacist-written discharge medication orders

Rafael Ochoa-Gonzalez^{1,2,3}, Steve Sawyers^{4,5}, Alexandra Vock¹, Lindsay Saults^{6,7}

Background: Medication errors (MEs) resulting in patient morbidity or even death, sometimes of increased or if preventable, are a significant public health problem. Written medicines-related discharge information is a key component of patient safety and needs to be fully and accurately transferable. A collaborative audit and service evaluation involving 45 hospitals in England was conducted to assess the quality of written medicines-related discharge information and to identify areas for improvement.

Methods: A collaborative audit and service evaluation involving 45 hospitals in England was conducted to assess the quality of written medicines-related discharge information and to identify areas for improvement. The audit and service evaluation was conducted over a 12-month period. The audit involved a review of written medicines-related discharge information from 45 hospitals. The service evaluation involved a review of the written medicines-related discharge information from 45 hospitals. The audit and service evaluation was conducted over a 12-month period.

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Conclusion: The audit and service evaluation identified several areas for improvement in the transfer of written medicines-related discharge information. The most common errors were related to the accuracy of the information and the clarity of the instructions. The audit and service evaluation also identified several areas for improvement, including the need for better training and education for pharmacists and other healthcare professionals involved in the transfer of written medicines-related discharge information.

- 509 pharmacist-written TTAs, 4358 medications
- 2% of TTAs contained an error
- 0.2% of medication orders were erroneous
- The incidence of errors in pharmacists' medication orders was low

King's College Hospital NHS Foundation Trust

Post Hospital medicine Reconciliation: The impact of providing enhanced information regarding medication changes

Behrangulandou, Ezzah, Adedunjo, Sulaiman, Olatunbosun
Pharmacy department, CCL, London
KING'S HEALTH PARTNERS
Promoting better health for all
An Academic Health Science Centre for London

- Providing enhanced information reduced numbers of discrepancies -14% of 40%
- Patients without enhanced information were four times more likely to have a discrepancy
- Unmatched doses and formulations, wrong drug, stopped

Sample CMR letter

STOPPED Medications	Notes
Bendroflumethiazide 2.5mg oral, in the morning	Stopped due to low blood pressure
Medications on Admission: TO CONTINUE as prior to admission	Notes
Calcicos oral, one twice a day	No change on admission, continue
NEW/CHANGED Medications	Notes/Indication
Ramipril 2.5mg oral, in the morning	Dose reduced due to low blood pressure
Bisoprolol 2.5mg oral, in the morning	Started for atrial fibrillation, please monitor heart rate and blood pressure and up titrate dose to maximum tolerable dose
Ferrous sulphate 200mg oral, twice a day	For microcytic anaemia. Hb = 101g/L on 21/05/15. Please re-check level in four weeks' time
Ergocalciferol 50,000units oral, in the morning for 10 days.	For vitamin deficiency. Commenced on 18/05/15. Course to complete on 28/05/15. Last serum level = 18nmol/L. on 18/05/15. Please re-check level after this course and review.

King's College Hospital NHS Foundation Trust

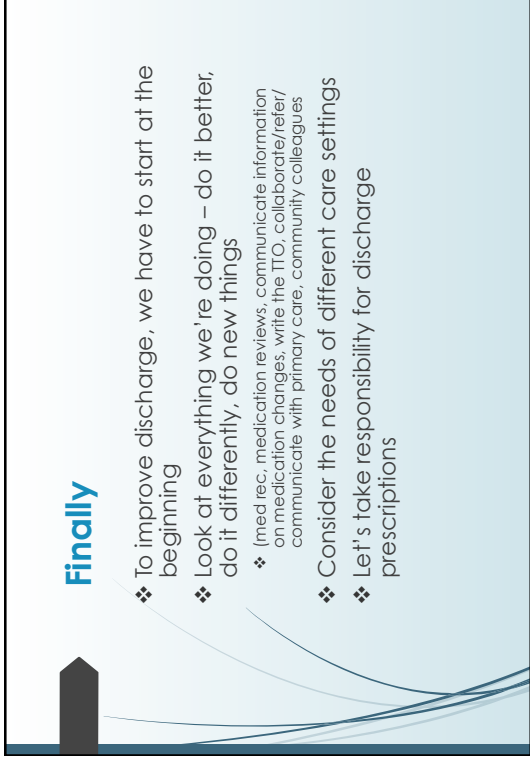
Post Hospital medicine Reconciliation: The impact of providing enhanced information regarding medication changes

Behrangulandou, Ezzah, Adedunjo, Sulaiman, Olatunbosun
Pharmacy department, CCL, London
KING'S HEALTH PARTNERS
Promoting better health for all
An Academic Health Science Centre for London

The provision of detailed information on medication changes at discharge supports reconciliation in primary care

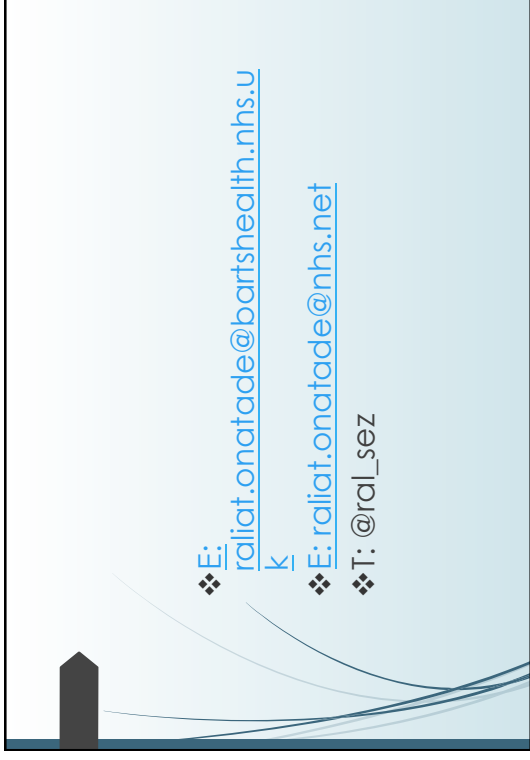
Exercise

- ❖ Two things you might do to improve discharge medication prescriptions / transfer of pharmaceutical care in your organisation?
 - ❖ Consider the whole pathway - medication reconciliation at admission, medication review, and discharge planning.
 - ❖ Quality improvement – what might you measure



Finally

- ❖ To improve discharge, we have to start at the beginning
- ❖ Look at everything we're doing – do it better, do it differently, do new things
 - ❖ (med rec, medication reviews, communicate information on medication changes, write the TTO, collaborate/refer/communicate with primary care, community colleagues)
- ❖ Consider the needs of different care settings
- ❖ Let's take responsibility for discharge prescriptions



- ❖ E: ralliat.onatade@bartshealth.nhs.uk
- ❖ E: ralliat.onatade@nhs.net
- ❖ T: @ral_sez

Session Feedback Form

Delegates registered: 21
Feedback forms returned: 10

Your feedback is very important and helps the UKCPA plan future events. Please hand the form in at the end of the session.

Title of session: 'Improving Discharge: Medication Prescriptions'

Tutor: Raliat Onatade

Level: Core Advanced

Date: Saturday 25th November - 1:00pm

1. How well did the Tutor communicate the session content?

Good **8** Satisfactory **2** Poor **0**

2. How would you rate the session content?

Good **8** Satisfactory **2** Poor **0**

3. Was the material pitched at the advertised level?

Too high **1** About right **9** Too low **0**

4. Did you learn anything new at this workshop?

A lot **8** Some **2** No, but useful **0**
Nothing revision at all

5. Do you feel your attendance at this session was worthwhile and met your expectations?

Yes, very **8** Yes, **2** No, not **0** No,
not somewhat very at all
much

Please Turn Over

6. If this session is repeated would you recommend it to your colleagues?

not 0
much somewhat very at all

Please Turn Over

6. If this session is repeated would you recommend it to your colleagues?

Yes 9 Yes, but to more 1 Yes, but to more 0 Yes,
but to pharmacists of a 0
senior colleague's junior colleague's similar grade to myself
No 0

7. What was the best part about the session, could it be improved?

Best part:

Evidence presented- speakers experience

Enlightning- (unable to read handwriting)

Excellent

Considering new options/future challenges- thought provoking

Thought provoking discussions regarding implications

Improvements:

Details on implementation process

8. Can you suggest relevant topics for inclusion in future sessions?

9. Any other general comments?

Great presentation from leader in the field

Thank you!

Very enjoyable session

Thank you!

Please state your preference to your comments being used in future UKCPA marketing literature:

I am happy for my comments to be used to promote future events

I would prefer my comments not to be used to promote re events

Thank you.

ONATADE, Raliat (BARTS HEALTH NHS TRUST)

From:
Sent:

Andrew Davies

Cc:
Subject:

Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
RE: improving discharge

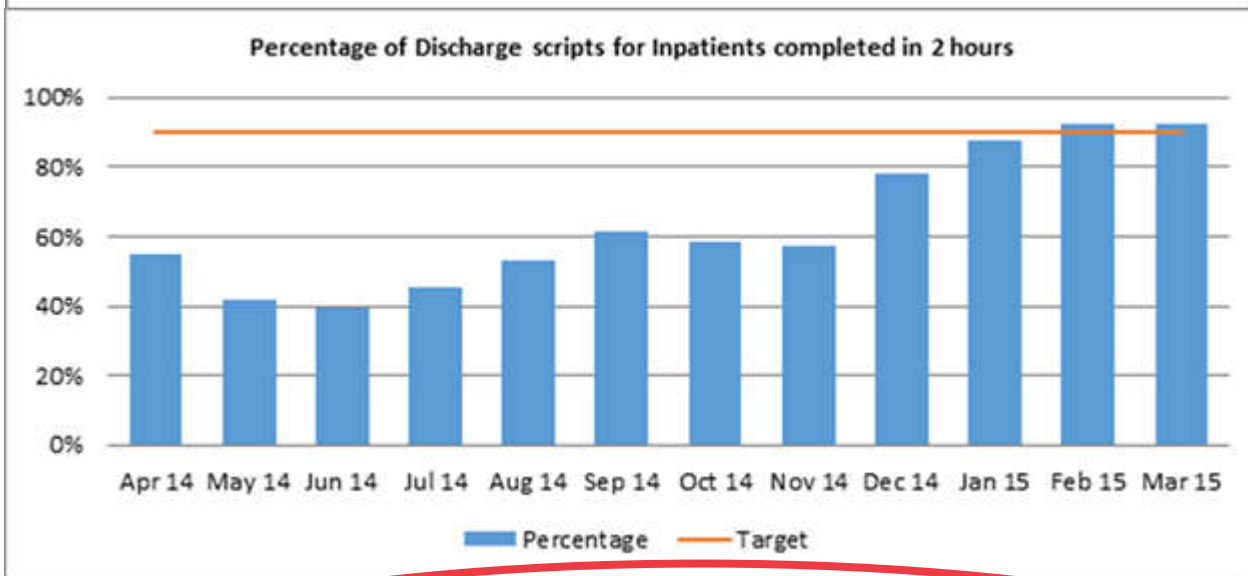
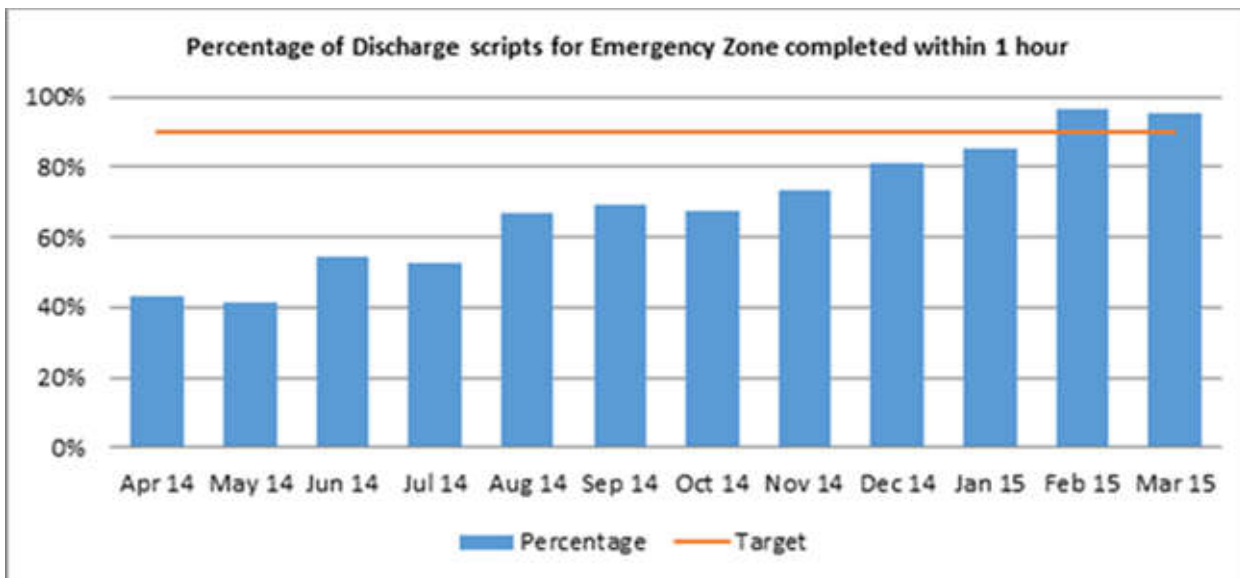
Morning all

The story sounds Oh so familiar!

We also had the same perceptions and challenged leading to us having Discharge Turnaround Times imposed by the organisation – we have to have 90% of any “emergency zone” – admissions, ED, seated assessment done within 1 hour and all other discharges completed within pharmacy within 2 hours. Having had to move our previous 2 hospitals into our new one almost 12 months ago we really struggled to achieve this initially – mainly due to culture and behaviours across the organisation – staff “forgot” how to do things on the wards and no-one could ever find a junior doctor! (Bear in mind we historically had a 4 hour turnaround when we were in the 2 old hospitals)

We have put concerted efforts in to move to a chart free dispensary, implemented a TTA tracker type system in the dispensary – a big screen with all TTO’s and their SLA turnaround flagged – Red/Amber/Green. We also have to provide exception reports on any that breach the SLA

Currently we are running at 93.5% compliance



But, surprise surprise! The discharge delays remain. We are also piloting the Kings drug listing model – have had 2 months on 1 ward – with some positive results – with, in particular, improvements in early discharge readiness and are trying to get resourcing to support targeted roll out. We are also utilising a team based working approach to covering wards to provide a broader service – rather than relying on individuals – who can't be there all of the hours we are providing services.

Meds Rec on admission is running at 99% and we are just moving to develop the meds rec on discharge process with community colleagues but there is "resistance" Locally we have an IT portal for connecting up systems – Connecting Care which directly accesses the full GP system and will be used to provide discharge letters for GP's and work is ongoing to provide community pharmacy access – we also have SCR – which does really help – we are accessing this >400 times each week for out of area patients and we only started using it in March! We have found one of the biggest use areas for both the local portal and SCR is our pre-op assessment team – we have 2 WTE pharmacists just assigned into pre-op and this is having a marked effect on improving the admission process and pre-planning for discharge – and they are the main users of the community records.

The best thing is that all this work has helped the organisation accept that this is not a pharmacy issue as we have clear data! We have, to a patient level, all times for TTO's and provide that information routinely as part of the organisations performance dashboard. We, as others, are closely involved in the patient flow meetings and have met with ECIST etc

My organisation recently ran one of those “perfect weeks” and though we in pharmacy saw TTO’s much earlier we still had the same turnaround time >90% but due to the support to get patients moving on the wards there were no bed problems – as Social Care, transport etc were all sorted out as well!

Andrew

Andrew Davies
Director of Pharmacy
North Bristol NHS Trust
Brunel Building
Southmead Hospital
Bristol
BS10 5NB

(PA Eileen Niven [redacted])

[redacted]

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From: Scott, DrMichael [redacted]

Sent: 28 April 2015 07:10

[redacted]

Cc: 'raliat.onatade@nhs.net'

Subject: Re: improving discharge

Hi Jacqueline

Similar to chris

We now do as many of the discharges with pharmacist prescribers so we have more control

We do at ward level we also have tried to ensure full med rec by pharmacy at admission as this can slow discharge if not done re delays very few due to pharmacy keep our own data

We get lustrs of patients going or are likey to go home to get ahead of the system we have been pairing pharmacist with discharge doctor at week ends now considering doctor light discharge

Best wishes

Mike

From: Barrass Chris (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST) [redacted]

Sent: Monday, April 27, 2015 05:39 PM

To: Miller Jacqueline Diane (RTR) South Tees NHS Trust [redacted]

Cc: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST) <raliat.onatade@nhs.net>

Subject: RE: improving discharge

Jacqueline

Here at King's we've solved this problem by having pharmacists write the majority of TTAs. Currently we're writing 79% of all TTAs – with the remaining 20% or so being those TTAs still prescribed at weekends and out of hours. The process is called **Drug Listing** and there's a lot more details in the attached presentation from last year's ATHP meeting – many of which you will have already seen.

And whilst I'm not one to 'hide my light under a bushel', it genuinely does work! My view was that Pharmacy will always get blamed for any delays in TTAs – irrespective of the truth [as other's have alluded to] – so we might as well take control of as much of the process as we can! And pharmacists are both much more motivated, and much better equipped, than junior doctors when it comes to writing up TTAs – so let's just do it! And as a result there have been no complaints about TTA delays since 2010/11 – and we're not a small hospital [1000+ beds, 160K TTA items + 120K DFD items/year]!

If you'd like to know more just drop me a line – or contact Raliat Onatade, my long suffering Clinical Services Manager. She did all the hard work!

Take control! Start Drug Listing! ☺

Have fun!

Chris

Chris Barrass

Director of Pharmacy

King's College Hospital NHS Foundation Trust

[Redacted]

From: Miller Jacqueline Diane (RTR) South Tees NHS Trust

Sent: 27 April 2015 16:21

[Redacted]

Subject: improving discharge

Hi

Our Trust is looking for any initiatives that have been adopted by others to improve the discharge process from the point of telling a patient they can go home to generating the prescription. I think they understand the concept that pharmacy is not the bottleneck but somehow still holds us responsible. Have any of you manage to adopt any successful approaches you would like to share????

Thanks

Jacqueline Miller
Director of Pharmacy
South Tees Hospitals NHS Foundation Trust
James Cook University Hospital
Marton Road
Middlesbrough
TS4 3BW
Tel. 01642854792

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NHSmial provides an email address for your career in the NHS and can be accessed anywhere

Onatade, Raliat

From: [REDACTED] Tf (ROYAL FREE LONDON NHS FOUNDATION TRUST)
Sent: 10 December 2014 18:44
To: [REDACTED] Tase (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Cc: [REDACTED] (ROYAL FREE LONDON NHS FOUNDATION TRUST); Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Subject: RE: transcribing

Dear Tase,

Both Meera and I have found the visit very valuable and informative. We are drawing up a proposal for our Divisional Director to implement "drug listing" on a small number of high turnover wards. Hopefully when EPMA comes in next year we can rollout "drug listing" to the whole hospital.

Once again thank you and Rowan for giving up your time to show us "drug listing" yesterday.

Regards

TF [REDACTED]
Deputy Chief Pharmacist
Royal Free London NHS Foundation Trust

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Sent: 02 December 2014 10:20
To: [REDACTED] Tf (ROYAL FREE LONDON NHS FOUNDATION TRUST)
Cc: [REDACTED] Meera (ROYAL FREE LONDON NHS FOUNDATION TRUST); [REDACTED] Beverley (ROYAL FREE LONDON NHS FOUNDATION TRUST)
Subject: Re: transcribing

Hi TF

Next Tuesday – 8th - in the morning is good, otherwise Friday 12th – I'm don't have any meetings after 10.30, but morning might be better if you want to go to wards with one or two pharmacists to observe. We have our regular staff meeting from 9 –9.15 on Fridays. There are bound to be lots of discharges on Friday!

Raliat Onatade

Deputy Director of Pharmacy, Clinical Services
Clinical Lecturer – King's College London
King's College Hospital NHS Foundation Trust
Denmark Hill
London SE5 9RS
Tel: 020 3 299 1494

From: "[REDACTED] Tf (ROYAL FREE LONDON NHS FOUNDATION TRUST)" [REDACTED]
Date: Tuesday, 2 December 2014 09:03
To: x x <raliat.onatade@nhs.net>
Cc: "[REDACTED] Meera (ROYAL FREE LONDON NHS FOUNDATION TRUST)" [REDACTED] Beverley (ROYAL FREE LONDON NHS FOUNDATION TRUST)" [REDACTED]
Subject: RE: transcribing

Dear Raliat,
Hope you are well.

We are under increasing pressure to transcribe for more wards and I wonder if we could visit you at Kings to learn more about your processes.

Please give us a couple of availabilities and we will work around your schedule. The people visiting will be Meera, Beverley and I.

R
TF

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Sent: 19 April 2014 14:23
To: [REDACTED] Tf (BARNET AND CHASE FARM HOSPITALS NHS TRUST)
Subject: RE: transcribing

Hi TF
Happy to speak to you or your staff about this, feel free to contact me anytime.



Raliat Onatade
Deputy Director of Pharmacy, Clinical Services
Honorary Clinical Lecturer – King's College London
King's College Hospital NHS Foundation Trust
Denmark Hill
London SE5 9RS
Tel : 020 3 299 1494
Pager when calling from a KCH site: KH2184
Pager when calling from elsewhere: call 07659596492

From: [REDACTED] Chris (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Sent: 15 April 2014 08:59
To: [REDACTED] Tf (BARNET AND CHASE FARM HOSPITALS NHS TRUST)
Cc: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Subject: RE: transcribing

TF

Raliat is the expert on this – and I'm sure she'd be happy for a couple of your team to visit. I've copied her email address in so probably best for you to contact her directly about dates [her number is 020 3299 1494]

Regards

Chris

Chris [REDACTED]
Director of Pharmacy
King's College Hospital NHS Foundation Trust
[REDACTED]

From: [REDACTED] Tf (BARNET AND CHASE FARM HOSPITALS NHS TRUST)
Sent: 15 April 2014 08:01

To: [REDACTED] Chris (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Subject: transcribing

Good morning Chris.

I read about the good working Raliat is doing at Kings and wonder if a couple of my pharmacists can visit to learn more about this process? We have transcribing at Barnet but we could only introduce to 4 medical wards without resources. It will be great if we can find out whether there is a more efficient process so that we can roll out to more wards.

R
TF

Chief Pharmacist
[Barnet, Chase Farm and Edgware Hospitals](#)

[REDACTED]

From: [REDACTED] Mojgan (THE QUEEN ELIZABETH HOSPITAL, KING'S LYNN, NHS FOUNDATION TRUST)
Sent: 09 April 2014 17:45
To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Subject: Re: TTOS prescribing

Wow well done you are a star

> On 8 Apr 2014, at 18:44, "Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)"

<raliat.onatade@nhs.net> wrote:

>

> I'm presenting this at the Clinical Pharmacy Congress in April - one of the projects shortlisted for the Innovation award. Please come along if you're planning to be there, it's from 11 -12 on the Friday 25th.

>

>

>

>

>

> Raliat Onatade

> Deputy Director of Pharmacy, Clinical Services Honorary Clinical

> Lecturer - King's College London King's College Hospital NHS

> Foundation Trust Denmark Hill London SE5 9RS Tel : 020 3 299 1494

> Pager when calling from a KCH site: KH2184 Pager when calling from

> elsewhere: call 07659596492

>

>

>

> -----Original Message-----

> From: [REDACTED] Mojgan (THE QUEEN ELIZABETH HOSPITAL, KING'S LYNN, NHS FOUNDATION TRUST)

> Sent: 08 April 2014 18:29

> To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)

> Subject: Re: TTOS prescribing

>

> Thank you so much

>

>> On 8 Apr 2014, at 09:45, "Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)"

<raliat.onatade@nhs.net> wrote:

>>

>> Hi Mojgan

>> This is a good example. Funding was approved, initially for 9 months, and then permanently.

>>

>>

>>

>>

>> Raliat Onatade

>> Deputy Director of Pharmacy, Clinical Services Honorary Clinical

>> Lecturer - King's College London King's College Hospital NHS

>> Foundation Trust Denmark Hill London SE5 9RS Tel : 020 3 299 1494

>> Pager when calling from a KCH site: KH2184 Pager when calling from

>> elsewhere: call 07659596492

>>

>>
>> -----Original Message-----
>> From: [REDACTED] Mojgan (THE QUEEN ELIZABETH HOSPITAL, KING'S LYNN, NHS FOUNDATION TRUST)
>> Sent: 07 April 2014 19:12
>> To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
>> Subject: Re: TTOS prescribing
>>
>> Thank you so very much. This us really helpful. Would it be possible to see one of your business cases as we'll please?
>> Mojgan
>>
>>> On 7 Apr 2014, at 17:32, "Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)" <raliat.onatade@nhs.net> wrote:
>>>
>>> Hi Mojgan
>>> Here is our policy, but please feel free to call and ask me any questions, as it's quite specific to King's. We incorporated it into the routine clinical pharmacy work of individual clinical pharmacists, we don't have a separate team. The resource implications just to introduce this weren't massive. Some factors:
>>>
>>>
>>> - Our dispensary is chart free so TTAs had to be screened by the pharmacist, and then the printed copy brought to the disp.
>>>
>>> - We had to correct a significant proportion of doctor-written TTAs. 40% - 50% on average, but in some specialties, as much as 80% of all TTAs had to be amended by a pharmacist. Several times we calculated the time taken to chase doctors for TTAs, look for the printed copies which the doctors had left somewhere, answer the bleeps from wards asking if we'd seen the TTAs, run back to the ward (several times a day) to sort out TTAs, screen, identify discrepancies, bleep the doctor to query, then make the correction on the system. The pharmacist actually writing the TTA in the first place always balanced out, making it time-neutral
>>>
>>> - But if the clinical pharmacy capacity /input/structure is not at the right level in the first place, or if someone is covering 2 or 3 wards routinely and also expected to spend a few hours a day doing other work, then extra resources may be needed, because the clinical pharmacy staffing is probably not right anyway.
>>>
>>> - If a pharmacist is routinely covering 2 or 3 wards, both quite fast turnover, the problem is also that of prioritising competing demands - both wards will need you at the same time for TTAs, ordering

drugs, completing med rec, screening new prescriptions etc.

>>>

>>> - So wherever possible, we introduced it into the clinical teams' regular work without giving them extra staff - I think I specifically asked for about 2 members of staff in a couple of teams, just for TTA writing, but other times, as activity increased and we did business cases, we would always include the service as part of the business case. If we got more staff on the back of activity (not anymore!), or in response to requests for more input it became a normal part of the role.

>>>

>>>

>>>

>>> Example - for acute, fast turnaround medical wards, we have the equivalent 1 B7 pharmacist per ward and they can write the TTAs, even when they have to additionally help cover a less acute ward, and write those TTAs also. For less acute wards, we might have the equivalent of 2 pharmacists over 3 wards. I hope this helps - sorry I can't be more specific about resource, but I'm always happy to chat if you want to call.

>>>

>>>

>>> [cid:image001.jpg@01CF5281.0A0A74F0]

>>>

>>> Raliat Onatade

>>> Deputy Director of Pharmacy, Clinical Services Honorary Clinical

>>> Lecturer - King's College London King's College Hospital NHS

>>> Foundation Trust Denmark Hill London SE5 9RS Tel : 020 3 299 1494

>>> Pager when calling from a KCH site: KH2184 Pager when calling from

>>> elsewhere: call 07659596492

>>>

>>>

>>> From: [REDACTED] Mojgan (THE QUEEN ELIZABETH HOSPITAL, KING'S LYNN, NHS FOUNDATION TRUST)

>>> Sent: 05 April 2014 15:40

>>> To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)

>>> Subject: TTOS prescribing

>>>

>>> Dear Raliat

>>> Hope you are well. Please may I have a copy of your pharmacist prescribing of TTOs?

>>> Do you know what the resource implications were for this?

>>> Many thanks

>>> Mojgan

>>>

>>> On 17 May 2013, at 17:09, "Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)"

<raliat.onatade@nhs.net<mailto:raliat.onatade@nhs.net>> wrote:

>>> Hi Mojgan

>>> Thanks for the reminder. Here is our service spec. It's a little out of date wrt Sunday staff (we have more staff working now), but the rest is fine. Let me know if you need anything else, or if you have any

more questions.

>>>

>>>

>>> <image001.jpg>

>>>

>>> Raliat Onatade

>>> Deputy Director of Pharmacy, Clinical Services King's College
Hospital

>>> NHS Foundation Trust Denmark Hill London SE5 9RS

>>> 020 3 299 1494

>>> Pager KH 2184 (To page from outside the hospital, call 07659596492
and

>>> speak to operator)

>>>

>>> <Service Spec Jan 2012.doc>

>>> <KCH Drug List Policy V1.pdf>

>>> <image001.jpg>

>> <Proposal for additional support for the Liver Pharmacy Team July
2008.doc>

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Sent: 03 December 2014 13:40
To: 'Alison [REDACTED]'
Subject: RE: Visit to see pharmacist transcribing project

Hi Alison
Yes, 11 to 1 on the 12th will be fine.

Raliat Onatade
Deputy Director of Pharmacy, Clinical Services
Clinical Lecturer - King's College London
King's College Hospital NHS Foundation Trust
Denmark Hill
London SE5 9RS
Tel : 020 3 299 1494
Pager when calling from a KCH site: KH2184
Pager when calling from elsewhere: call 07659596492

From: Alison [REDACTED]
Sent: 03 December 2014 10:15
To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Subject: RE: Visit to see pharmacist transcribing project

Dear Raliat

Thank you for getting back to me. We would like to come and visit on Friday 12th December. Would it be OK to visit 11am to 1pm? Hopefully 2 hours will be long enough to cover the project and look at any other initiatives you have in place. If you think we will need longer please let me know. Due to childcare I will need to be on the 15.15pm Paddington train but we could arrive earlier.

I look forward to meeting you next week.

Kind regards

Alison

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
[mailto:raliat.onatade@nhs.net]
Sent: 02 December 2014 11:52
To: Alison [REDACTED]
Subject: Re: Visit to see pharmacist transcribing project

Dear Alison
I'd be pleased to have you visit. I have visitors from another hospital coming on either Tue 8 December (morning) or anytime on Fri 12 December. I'm waiting to hear back from them, but would either of these dates suit you?

Deputy Director of Pharmacy, Clinical Services
Clinical Lecturer - King's College London
King's College Hospital NHS Foundation Trust
Denmark Hill
London SE5 9RS
Tel: 020 3 299 1494

From: Alison [REDACTED]
Date: Wednesday, 26 November 2014 20:04
To: x x <raliat.onatade@nhs.net>
Subject: Visit to see pharmacist transcribing project

Dear Raliat

My director of pharmacy has shared your poster on the success of pharmacists transcribing. I would like to arrange for myself and one of my clinical team managers to visit your hospital to see the project in action and to find out more details. North Bristol NHS Trust are looking at all ideas for improving patient flow and we have the opportunity to get some locum funding to allow us to do a test of change, based on your work. We are keen to get this off the ground as soon as possible and so I was hoping that we could look at getting a visit in the diary in December.

I would be grateful if you could let me know your availability over the next few weeks.

Kind regards

Alison [REDACTED]
Principal Pharmacist Medicines Management

North Bristol NHS Trust
Pharmacy Department
Brunel Building
Southmead Hospital

[REDACTED]

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From: Wendy [REDACTED]
Sent: 11 March 2014 09:27
To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Subject: Appreciative thanks for meeting with us regarding TTO writing- able to share the paperwork?

Dear Raliat

Many thanks for taking the time to talk to us about TTO writing and your systems in general.

We went away very inspired and have started the process of engagement.

I was wondering if you would be willing and able to share the following documentation in preparation:

- * Competency framework
- * Amendment by protocol
- * TTO writing Policy
- * Audit tools

Please let me know how I can return the favour.

Many thanks
Wendy

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST) [mailto:raliat.onatade@nhs.net]
Sent: 27 February 2014 17:12
To: Wendy Pullinger
Subject: Re: 28th February-9.30am: Electronic prescribing and TTO transcribing

OK!

Raliat Onatade
Deputy Director of Pharmacy
King's College Hospital NHS Foundation Trust
Sent from a mobile device. Please excuse my brevity.
On 27 Feb 2014 15:22, Wendy Pullinger <Wendy.Pullinger@stgeorges.nhs.uk> wrote:
Hi Raliat

Looking forward to meeting with you tomorrow at 9.30am.

Best wishes
Wendy

From: Wendy [REDACTED]
Sent: 14 February 2014 15:25
To: 'Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)'
Cc: Wendy [REDACTED]
Subject: RE: Electronic prescribing and TTO transcribing

Hi Raliat

9.30am is good for us. We will come to the pharmacy. It would be great to hear about the EPMA system and how it works for you. (Will Hall is our EPMA lead- we hope to roll out in April 2014).

We are particularly interested in TTO transcribing and your electronic system and safety issues we need to be aware of /or implementing. Including impact on clinical services. Originally there were only meant to be two of us however the Chief suggested several of us visit to learn from your experience. If your EP lead is available that may be helpful as well.

Many thanks for seeing us.

Best wishes
Wendy

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
[mailto:raliat.onatade@nhs.net]
Sent: 14 February 2014 12:24
To: Wendy [REDACTED]
Subject: RE: Electronic prescribing and TTO transcribing

9.30 is good, if it's not too early for you. How much IT information will you need? I can talk about the EPMA system, and of course I can use it, but I haven't asked our EP lead to come along.

Raliat Onatade
Deputy Director of Pharmacy, Clinical Services
King's College Hospital NHS Foundation Trust
Denmark Hill
London SE5 9RS
Tel : 020 3 299 1494
Pager when calling from a KCH site: KH2184
Pager when calling from elsewhere: call 07659596492

From: Wendy Pullinger [mailto:Wendy.Pullinger@stgeorges.nhs.uk]
Sent: 14 February 2014 11:28
To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Cc: Wendy [REDACTED]
Subject: RE: Electronic prescribing and TTO transcribing

Dear Raliat

Wonderful, what time in the morning should we arrive?

There will be several of us:

- * [REDACTED] Team Leader for Surgery and Neuro
- * [REDACTED] Team Leader for Medicine and Cardiac
- * [REDACTED] Lead Pharmacist, IT

And myself

Many thanks
Wendy

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
[mailto:raliat.onatade@nhs.net]
Sent: 10 February 2014 15:59
To: Wendy [REDACTED]
Subject: RE: Electronic prescribing and TTO transcribing

Hi
Yes, I am.

Raliat Onatade
Deputy Director of Pharmacy, Clinical Services
King's College Hospital NHS Foundation Trust
Denmark Hill
London SE5 9RS
Tel : 020 3 299 1494
Pager when calling from a KCH site: KH2184
Pager when calling from elsewhere: call 07659596492

From: Wendy [REDACTED]
Sent: 10 February 2014 14:50
To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Subject: RE: Electronic prescribing and TTO transcribing

Hi Raliat

Apologies for the delay in getting back to you. Are you still able to do 28th Feb in the morning?

Many thanks
Wendy

From: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
[mailto:raliat.onatade@nhs.net]
Sent: 03 February 2014 17:52
To: Wendy Pullinger
Subject: RE: Electronic prescribing and TTO transcribing

Hi Wendy
The week of the 17th is no good, but I can do Mon 24th in the

afternoon, 25th in the morning
or 28th in the morning. Are any of these any good?

Raliat Onatade
Deputy Director of Pharmacy, Clinical Services
King's College Hospital NHS Foundation Trust
Denmark Hill
London SE5 9RS
Tel : 020 3 299 1494
Pager when calling from a KCH site: KH2184
Pager when calling from elsewhere: call 07659596492

From: Wendy [REDACTED]
Sent: 03 February 2014 17:16
To: Onatade Raliat (KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST)
Cc: Wendy [REDACTED]
Subject: Electronic prescribing and TTO transcribing

Dear Raliat

Would it be possible to meet up with you at Kings (sometime after 17th
Feb if possible) to
discuss TTO transcribing and electronic prescribing?

I have been hearing some great feedback about the system you have in
place.

Many thanks
Wendy

[REDACTED]

St. George's Healthcare NHS Trust
W: www.stgeorges.nhs.uk

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General Medicine Process Improvement Project

Workstream 4b – Improving the TTA Process

Interim Report – Aug 2004

Executive Summary

This is an interim report from Workstream 4b of the GM-PIP project. This workstream looked at the discharge summary (TTA) writing process with the aim of streamlining TTA production and reducing the frustrations and delays associated with the TTA process. On the trial ward (R D Lawrence), a pharmacist now asks for planned discharges daily, then checks and transcribes the TTA drug prescription. The doctors now have responsibility for confirming the final list of drugs and writing the GP summary only.

Performance indicators have been measured and reported weekly. A comparison with the control ward (Annie Zunz), has demonstrated that, significantly more TTAs were written a day in advance of the intended discharge date (average 55% cf 12%), and more TTAs were available on the ward before the patient was ready to leave (90% cf 48%). On the trial ward, 100% of TTAs that were written before the intended discharge date were available for the patient before discharge. The accuracy of the TTAs written by the pharmacist was similar to the doctor-written ones (80% cf 86%).

Nursing and pharmacy staff report less wastage, chaos, stress, frustration and pressure related to discharge as medication is now on the ward on time. Patients no longer harass staff while waiting for their medication. Processes have been streamlined and involvement of the pharmacist in patient discharge has meant that liaison and communication have improved, and the pharmacist is better able to facilitate the resolution of problems, or prevent them from occurring in the first place.

Doctors are not completing GP summaries in advance and the production of these is now the rate-limiting step in the TTA process. However, once the GP summary has been written, there is now no longer a further wait for medication. The roles and responsibilities of the junior doctors with regard to writing GP summaries on time are being addressed in a different initiative.

The trial has highlighted some risks and inefficiencies with current discharge processes and the electronic discharge notification system, which need to be resolved.

The trial has been successful in demonstrating on one ward that the traditional TTA system can be improved. Pharmacy does not have the resources to support rollout throughout GM without additional support. A pharmacy technician can manage some of the risks with the current system, be the liaison between the dispensary and the wards, support the pharmacists and manage the measurement of the performance indicators. In view of the proposed new GM footprint, sufficient pharmacists' time could also be released to allow for more pharmacy involvement in other aspects of the service. The project team therefore asks that funding for additional pharmacy technical support be approved to enable the new process to be extended across GM.

Aim

To streamline the TTA process to ensure timely discharge and reduce frustrations and delays.

Method

The discharge summary writing process was separated into two distinct processes – prescription writing and GP summary. A pharmacist checks and transcribes the prescriptions, liaising with ward staff to identify patients who are to be discharged the next day. Prescriptions for patients due for discharge the same day are also written. The prescriptions are sent to the dispensary in advance of the anticipated discharge. The prescriptions are dispensed and returned to the ward on the same day, so that in cases where discharge is the next day, the drugs are guaranteed to be available on the ward before the patient is ready to leave the ward. The junior doctors are responsible for checking and confirming that the pharmacist written TTA represents the intended discharge prescription. The GP summary can be written at anytime, and is separate from this process.

Measures

Measures

The following are used as indicators of performance/success criteria

- Proportion of TTAs written a day in advance of discharge (discharge planning)
- Proportion of TTAs available on the ward before the patient was ready to leave (timeliness)
- Proportion of TTAs which required an amendment after being dispensed by pharmacy (accuracy)

The times taken for each part of the TTA process – writing, dispensing and delivering to the ward were also logged.

Three weeks into the trial, ward and pharmacy staff were asked to complete a short questionnaire about the impact of the trial on their workload and the discharge process.

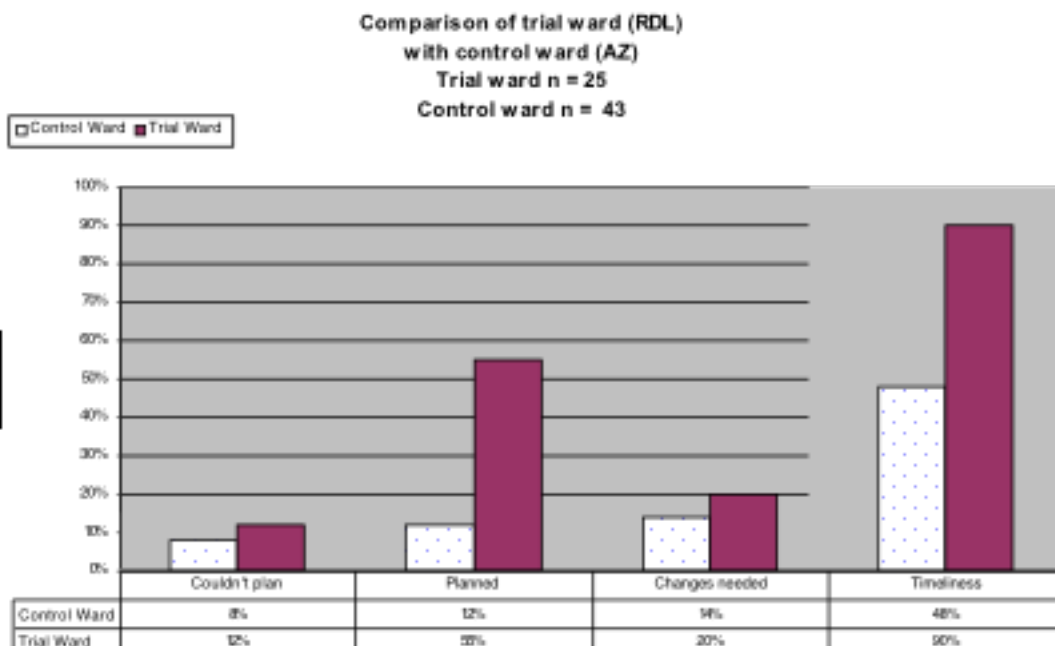
Results

The trial started on RDL ward on 29 June 2004. For three weeks - 12 to 30 July, control data was also collected from Annie Zunz ward to provide a comparison. The results on the trial ward presented are for the first five weeks, 29 June to 30 July. (The pre-registration house officer changeover and the trial of electronic prescribing have meant that much of the August data is not representative).

Pharmacy times

	Baseline	Trial Ward (5 weeks)	Control Ward (3 weeks)
Average time between agreement on the list of discharges to prescription arriving in the dispensary	Unknown. Anecdotally, usually several hours unless urgent. On control ward, the figure was 24 hours for at least 50% of discharges	59 minutes	Unknown
Average time taken to dispense a TTA (from arrival in dispensary to final check)	136 minutes (March 2004)	130 minutes	132 minutes
Average time taken for a dispensed TTA to be returned to the ward (from final check to arrival on the ward)	Unknown	60 minutes** (Three weeks data only, excluding first two weeks)	36 minutes**

**Data not fully confirmed as a) a new electronic prescription tracking system was introduced into pharmacy and has not yet fully bedded in and b) times prescriptions left dispensary and arrived on the ward were not always recorded consistently. More accurate data will be available once the tracking system is extended to the wards and has bedded in.



Questionnaire

14 respondents

Questionnaire

14 respondents

Six pharmacy staff (4 technicians, 2 pharmacists)

Two doctors

Six nurses

Results (neutral or not applicable responses not included)

	Yes	No
Nurses and Doctors		
Do you think the new process speeds up discharge?	5/8	3/8
Has it reduced your workload?	4/8	2/8
Pharmacy Staff		
Do the pharmacist-written TTAs take more time to process?	1/6	4/6
Do they need more clarification than standard TTAs?	0/6	5/6
Has the new process reduced your workload?	0/6	3/6
All staff		
Were you fully informed about the project before it started?	11/14	1/14

Quotes:

“Yes [discharge is speeded up] if the discharge date has been pre-determined. There are still a lot of TTAs done on people whose discharge decision is made on the spot.”

“It has meant patients going home at the same time as previously, but now more often with their TTAs.”

“Now have to chase doctors...unless pharmacist does it.”

Other findings

The trial has highlighted risks and inefficiencies with current discharge processes and the electronic discharge notification system. These include:

- If a doctor changes a drug on the EPR after a TTA has been done, then pharmacy do not have to be informed and the patient may leave the hospital with a prescription different from the one last seen by the pharmacist. There is no safeguard to ensure that a pharmacist has rechecked the prescription before the patient can be discharged.
- However if the doctor changes anything on the EDN (not a drug) then pharmacy do have to be informed in order to allow the ward clerk to complete the discharge. This has led to instances of GP summaries not being sent out, as the EDN has been changed and then not completed.
- The set up of the system is such that doctors can electronically confirm the discharge notification without seeing the list of drugs. There is no assurance that they will go into EPR and check the prescription written by the pharmacist (although as some changes have been made to TTAs, this happens at least some of the time).
- There is currently no system to allow pharmacists to verify a TTA electronically before it can be dispensed and issued to the patient. They still have to sign a paper

- There is currently no system to allow pharmacists to verify a TTA electronically before it can be dispensed and issued to the patient. They still have to sign a paper copy.
- Risks due to poor medicine management procedures on the wards and a lack of seamlessness between pharmacy and ward staff -
 - Drug lockers are often not emptied on discharge, resulting in different patients' drugs in lockers and patients going home with only part of their TTAs
 - Drugs dispensed for individual patient use are often not placed in lockers, get lost and need re-dispensing.
 - Ward staff often know when patients are due to go home, but pharmacists are not informed, and too frequently no action is taken to ensure TTAs are available, even when transport has been booked.
 - Medications no longer needed are often kept on the ward unnecessarily and not returned to pharmacy
- The production of GP summaries is now the rate-limiting step in the discharge process.

There are other issues with the EDN/EPR system, which have been addressed in the short term by the project team. Long-term solutions will need to be found before roll-out (detailed in IT requirements document).

Benefits

The trial has demonstrated that it is possible for pharmacists to check and transcribe discharge prescriptions a day in advance without compromising on accuracy. All TTAs written in advance are available on the ward before the patient is ready to go home. A majority of staff asked felt that the new system was an improvement, although they felt that discharge was not speeded up because the GP summary still had to be produced. However, the further delay (two hours) for the drugs after the GP summary had been written is eliminated with this new process.

It was not appropriate to ask patients if the new process improved their experience, as most would have had nothing to compare it with. However, as a proxy measure of the patient experience, nurses believe that more patients are going home with their TTAs and no uncollected TTAs are left on the ward. This has also reduced wastage.

Qualitatively, the discharge process is less chaotic and as the stress of waiting for discharge medication has reduced, the quality of the working environment has improved. Nurses report a significant reduction in harassment, aggression and pressure from patients related to their discharge.

The relationship and communication between ward and pharmacy staff has improved. Senior nursing and pharmacy staff also report that the trial has enabled closer liaison with pharmacy regarding discharges and even for patients where the TTA is written on the day of discharge, the process is much more streamlined and timely.

The trial has contributed to the positive benefits of medicines management. Nurses direct discharge medication queries to the pharmacist who, because of his/her increased involvement and knowledge of discharge plans, is better able to resolve problems and facilitate timely supply of medication.

The addition of a Pharmacy technician to the team for four weeks enabled practical issues relating to the trial to be addressed. She also managed the performance measurements. However, the technician also supported both the trial and control wards with their TTAs, liaising with ward staff, patients, doctors, and the discharge coordinator, informing pharmacy staff of priorities, (dispensing and delivering when necessary), ensuring patients went home with all their medicines and removing unwanted drugs from lockers and ward cupboards on discharge. Since she left, the performance measures have been scaled back as the project team cannot support the manual data collection.

Proposal

The Medicine Pharmacy team will align their services to fit with the proposed new footprint for GM wards (detailed in separate response to the consultation document). However the roll out of pharmacists writing TTAs will require continued technical support. GM currently have one pharmacy technician supporting medicines management on the DHE wards. This is an initiative now well established in the NHS and fits with DoH and Audit Commission reports on medicines management. Coupled with the configuration changes, extra technical support in General Medicine

pharmacy technician supporting medicines management on the DHE wards. This is an initiative now well established in the NHS and fits with DoH and Audit Commission reports on medicines management. Coupled with the configuration changes, extra technical support in General Medicine will free up pharmacists and nursing time and allow for the following across GM:

- Roll out of pharmacist checking and transcribing TTAs, Monday to Friday. (Full roll out is conditional on the extension of electronic prescribing and changes made to EPR – detailed in IT Requirements Document)
- Optimising management of medicines on wards, for individual patients from admission to discharge. More efficient use of medicines may result in small cost savings. However, increased efficiency, reduced workload for nursing staff and reduction of risk are the key benefits
- Extension of the Dispensing for discharge system. On the trial ward, dispensing for discharge where possible has meant that in several cases, the TTA prescription did not need to be sent to the dispensary as all the medication was already on the ward, labelled with instructions. On Christine Brown, the pilot project of full dispensing for discharge has been very successful and is supported by senior nursing staff, however the current level of pharmacy input is unsustainable without extra resource. It has been agreed that the project should continue, pending a decision about additional technical support. Combining dispensing for discharge and pharmacists checking and transcribing TTAs is optimum for smooth and reliable medication supply and use on admission through to discharge.
- Full support to self – administration schemes in appropriate patient groups
- Greater involvement of pharmacists in ward rounds/MDMs/MDRs - The value of a pharmacist attending these meetings has been recognised.
- Greater involvement of a pharmacist in A&E
- Greater concentration on outpatients to improve prescribing and reduce drug expenditure (Pharmacist involvement in an outpatient diabetes clinic)
- Regular training for nursing staff on drug use (commitment of one day a quarter)
- Increased junior doctor training
- Pilot regular pharmacist involvement in medication review clinics (as per Pursuing Perfection)
- Three-month trial of pharmacist attendance on post-take ward rounds. This has been proven to reduce prescribing errors, improve the quality of prescribing by preventing inappropriate medication from being initiated, improve discharge and may help reduce length of stay. Cost savings have been demonstrated in one Trust.
- The following performance measures are proposed:
 - Proportion of TTAs written a day in advance – Target: 60% of TTA prescriptions to be written by the pharmacist a day in advance of the patient's actual discharge date.
 - Accuracy of TTAs – Target: 75% of TTA prescriptions written by pharmacists will not be changed after dispensing has been completed. (The measurement of this indicator across all firms will depend on automated reports being available).
 - Timeliness of TTAs – Target: 90% of patients will have their medication on the ward before they are ready to go home.

(In the medium term, the collection of this information will need to be automated).

Experiences from other trusts with well-established ward-based technician services indicate that the optimum ratio is three wards (70 to 80 beds) per technician. This allows for flexibility, full cover in the event of leave and short-term vacancies and the provision of the full range of medicines management services. One additional technician in GM will mean each will cover approximately 123 beds. Whilst this is over the recommendations, Pharmacy appreciates the current financial constraints. Ideally, GM would have one allocated technician per firm. Other NHS Trusts have achieved this by converting nursing vacancies. This is possible because a pharmacy technician relieves nursing staff of many of their current medicine management responsibilities, allowing them to concentrate on key nursing roles, with the added benefit of being a direct link to the Pharmacy Dept.

Without technical support, pharmacy can support the rollout of the new process to two additional wards, possibly two more once the Dulwich wards are on site (i.e. maximum of four in total with the new footprint).

Without technical support, pharmacy can support the rollout of the new process to two additional wards, possibly two more once the Dulwich wards are on site (i.e. maximum of four in total with the new footprint).

Without electronic prescribing, roll out may not be possible on those wards covered by junior pharmacists. A final decision on this will be made once more is known about the impact of electronic prescribing on pharmacists' working practices, including the TTA process.

Conclusion

The trial has been successful in its original aim, and has produced other benefits. Pharmacists checking and transcribing TTAs improves the discharge process. For full rollout, technical support is necessary. With the additional support, the new GM footprint will allow the Medicine Pharmacy Team to implement the new process, and extend services.

The trial will continue on RDL so that the impact of electronic prescribing can be evaluated. The project team will decide on a final review date, which will depend on progress with electronic prescribing.

The cost of an MTO3 pharmacy technician is approximately £30,200 pa. (including on costs).

Project Team:

Raliat Onatade, Pharmacy
 Patricia Yerbury, Pharmacy
 Tony Dilks, Pharmacy (EPR)
 Richard Frempong, RD Lawrence
 Lesley Graham, GM Care Group
 Guy Chung-Faye GM Consultant
 Amanda Gibb (locum technician)
 Chris Harper, McKinseys
 Greg Scutt, Pharmacy

August 2004

APPENDIX

Requirements Document Discharge Summary Process

The electronic prescribing developments have been taking into account as far as possible, but as our experience of it is limited, this document is based on the EDN process and does not include any changes to electronic prescribing.

Process/ Function needed	Comments
1. All discharge prescriptions (drugs, not GP summary) must be verified electronically by a pharmacist before they can be dispensed.	Verification by the pharmacist is an essential step. 4. (below) is not.
2. 3. If the discharge prescription (the drug list/section, NOT the GP summary) is changed, (drugs added/deleted/amended), this must be re-verified by a pharmacist before dispensing and completion.	The current situation where the prescription can be changed and the patient discharged without a pharmacist re-verifying the prescription is a clinical risk because of the risk of prescribing errors.
4. Where only the GP summary has been changed, (not the drugs) it will no longer need pharmacy to 'redispense/re-verify' before it can be confirmed and sent to the GP	If the drugs have not been changed, there should be no need to involve Pharmacy before the discharge is completed.
5. Clicking on 'dispensing' is no longer an essential step before the full summary can be 'completed' and sent to the GP (?remove the dispensing step altogether from the EDN?)	This is an optional change. This step adds no value, and may be unnecessary as if the patient is discharged directly from the ward (i.e TTA doesn't go down to pharmacy), no actual dispensing takes place. However, the pharmacist/ technician can always go into the system on the ward and 'dispense'.
6. There is a column on the drug list/EDN for the pharmacist/ technician to put	Currently the pharmacist can add comments on to the drug list but they are not printing

6. There is a column on the drug list/EDN for the pharmacist/ technician to put annotations or comments electronically (POD, dispensed as TTA, quantity to be dispensed etc). This should print out on the drug list and the final TTA so that all staff can see the annotations.	the system on the ward and 'dispense'. Currently the pharmacist can add comments on to the drug list but they are not printing out. A separate column would be less confusing.
7. Once verified, there is a separate option to print the drug lists/prescription only. A drug list is printed in pharmacy.	It is only useful for the drug list to be printed directly in pharmacy if the pharmacist's annotations also appear on the drug list and final TTA.
8. There is the option to view the TTA drug list (preferably on the EDN screen).	
9. The full EDN (summary and drugs) can be verified/confirmed electronically by the doctor (perhaps by putting in a password)	If 8. is possible, 10 (below) will not be needed as the second copy is for the dr to sign and put in the notes as confirmation that they have seen and are happy with the final version of the TTA.
10. If a TTA has been written/sent to pharmacy, there is an indication of this on the system so that a duplicate prescription is not generated.	
11. The EDN should by default be printed out twice.	But see 8. above.

Reports needed, by Firm

- Number/ proportion of drug lists completed at least a day in advance of discharge
- Number/ proportion of GP summaries started at least a day in advance of discharge
- Proportion of TTAs (drug lists) with subsequent corrections (by dr and pharmacist)
- Number of TTAs (drug lists) written by pharmacists and by doctors

Raliat Onatade
Pharmacy Department
September 2004

Agreed by GM-PIP Workstream 4b project team

Appendix

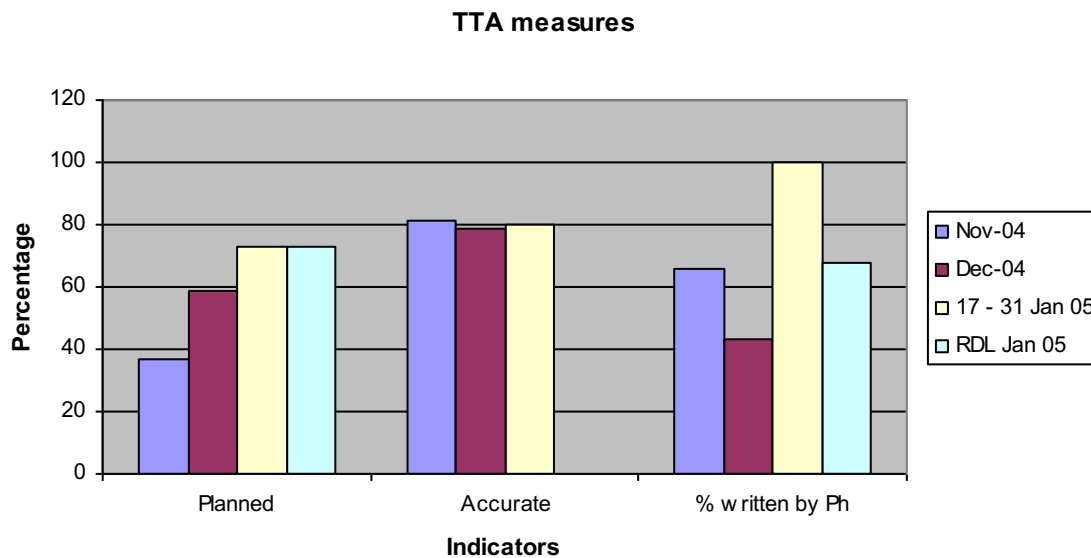
The process for completing an electronic discharge summary (prescription plus GP summary) consists of the following steps, not necessarily consecutive and not necessarily in this order.

1. Decision made that patient is to be discharged
2. Medication that patient will be taking after discharge is confirmed (from pharmacist, nurses, drs, clinical notes)
3. Medication that needs to be dispensed is confirmed (from patient, contents of POD locker)
4. Prescription written electronically and quantities needed annotated
5. Prescription screened by pharmacist
6. Prescription amended by pharmacist (optional)
7. Prescription sent to pharmacy (optional)
8. Prescription dispensed by pharmacy staff OR medication assembled on the ward from POD locker
9. GP summary written
10. Prescription confirmed by doctor
11. Prescription amended by doctor (optional)
12. Amended prescription sent to pharmacy (optional)
13. Amended prescription dispensed (optional)
14. Medication sent back to ward (optional)

TTA writing on GM wards

TTA writing and transcribing by senior pharmacists on the General Medicine Team started in June 2004, on RD Lawrence ward. Pharmacists now write TTAs on Marjorie Warren, RDL and, since 7 Feb 2005, Trundle. Without extra staffing support, this is the maximum number of wards on which this service can be sustained.

Graph. Measured Indicators for pharmacist-written TTAs (except where indicated, this is for Marjorie Warren and its predecessor wards only. Data is not routinely collected for the other wards).



Summary

Accuracy of pharmacist-written TTAs (the percentage which do not need to be returned to pharmacy for amendment) continues to exceed the target of 75%.

The percentage of TTAs which are written 24 hours prior to discharge (planned TTAs) has slowly increased on Marjorie Warren (MW) ward to the January figure of 63%, since we started in November. (In comparison with RDL where, within 4 weeks of implementation, 70% of TTAs were being planned). The target is 65%. On both wards, pharmacists still have to put a huge amount of effort into ensuring they are told about impending discharges. The disparity in the figures reflects how well staff on each ward have managed to respond.

In the last two weeks of January, we wrote all the TTAs on MW, and 68% of RDLs TTAs. The percentage of TTAs written by the pharmacist has not previously been reported and is included here as a rough measure of activity. It should also reflect the numbers of TTAs planned, as we will write all planned TTAs. No other conclusions can be drawn yet.

Medical and Nursing staff continue to appreciate the benefits of reduced workload for doctors, fewer waits for medication and more seamless discharge. Where we have one stop dispensing supported by a technician (MW ward), a significant proportion of TTAs are also completed on the ward, thus reducing delays further as there is no wait for dispensing. The doctors are now quite used to the system and it has been introduced onto Trundle easily, with few problems.

Issues to be resolved

Despite our efforts, the issue of communication has not been resolved, and needs focussed support from all areas to understand and overcome the barriers to improved communication regarding possible discharges.

Changes to the EDN system have not been implemented (although there have been discussions) and therefore we still have inefficiencies and risks to the Trust.

Raliat Onatade

Feb 2005

Report on the pilot project of pharmacist writing discharge prescriptions

Purpose

The purpose of this paper is to describe the results of a trial of pharmacist 'druglisting' – writing discharge medication - in the acute admission setting at Medway Hospital, and to seek support to continue and extend the trial.

Background

Anecdotally, delays to medication supply on discharge is thought to be a barrier to timely discharge. This is often due to delays in writing the prescription. Several Trusts have introduced initiatives where pharmacists write discharge medication, as a way to reduce this pressure. In January 2017, this service was introduced as a pilot on Lister Ward to assess the benefits.

Method

All healthcare professionals involved in the eDN process were informed. The following process was followed:

- pharmacist liaises with the multidisciplinary team to identify patients fit for discharge + urgent eDNs
- pharmacist discusses with doctor/team to confirm and optimise discharge medication
- pharmacist adds agreed medicines on to eDN
- discharge medication is dispensed in the pharmacy/on the ward
- doctor completes the clinical summary, ensures medication listed are still appropriate, then approves the eDN
- Once the druglist is approved by the doctor, the nurse is able to print the discharge letter so the patient can be discharged

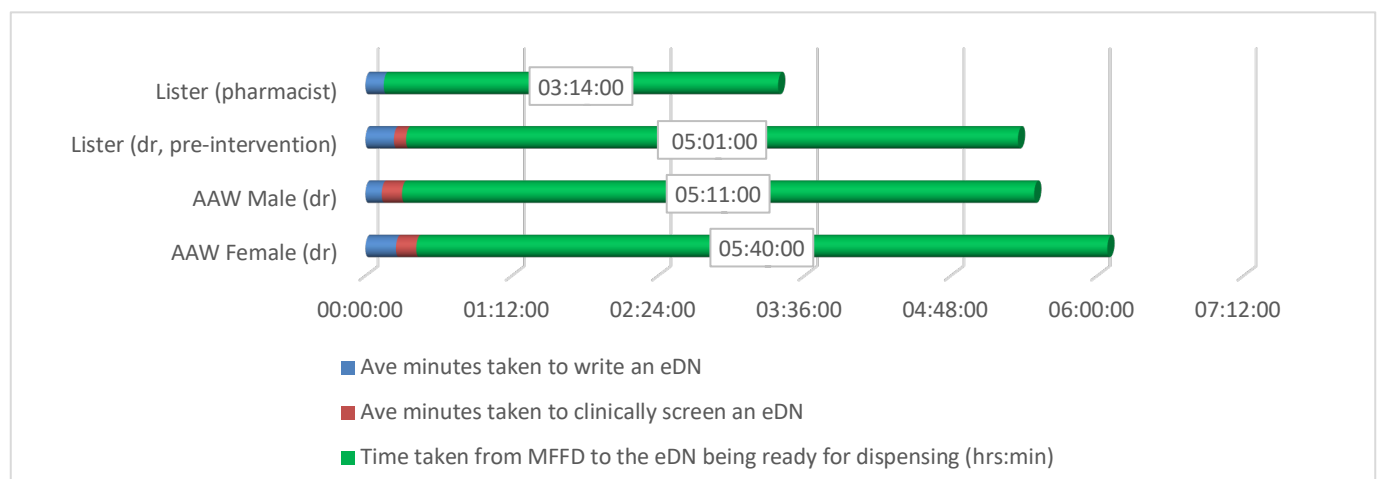
The initiative was evaluated for 4 weeks between 05/01/2017 – 02/01/2017. Data was also collected on both the male and female acute admission wards to see if other initiatives or changes could account for any impact seen.

Results

When a pharmacist wrote the eDNs

- Timeliness was improved - the average time lag between the decision that a patient was medically fit for discharge and the eDN being ready for dispensing was significantly reduced by **1 hr 52 minutes**.
- Safety and efficiency were improved – just **1%** of drugs required a change

Ward	No. of eDNs written	Ave no. of items per eDN	Intervention rate (due to error or change in plans)
AAW (Female) - Dr	32	12	23%
AAW (Male) - Dr	45	9	6%
Lister (pre-druglisting) - Dr	33	8	13%
Lister - Pharmacist	63	9	1%



Other benefits seen

- Seamless discharge medication process – the pharmacist or pharmacy technician is the one point of contact for all queries
- Reduction in prescribing errors and omissions
- Better staff satisfaction with the discharge medication process
- Closer interdisciplinary working
- Improved quality of information on discharge prescriptions i.e. communication of drug-related issues to GPs and community pharmacists (not measured in this pilot).
- The potential to improve medication related consultation with patients as pharmacists will be more involved in the discharge process
- Improvement in the emergency pathway for a better flow of patients through the hospital
- The potential to improve patient satisfaction

Discussion

When a pharmacist wrote discharge prescriptions, medication was ready earlier, and fewer changes to the prescription were needed. The length of stay per patient was potentially reduced by 2 hours, helping to ease the bed situation, as well as reducing stress and doctors' and nurses' workload.

The pharmacist's clinical screen was performed at the point of writing, helping to speed up the process. Although the pharmacist was quicker at writing the eDNs, patient safety was not compromised.

Currently, the eDN system is not configured to allow complete separation of the processes for writing the medication lists and the clinical summary. The difficulty this causes is currently being managed on Lister, but has to be resolved before large-scale rollout.

Conclusion

Overall the introduction of a pharmacist druglisting service has shown to be very effective and safe. Roll out will improve the discharge medication process. In order to consolidate and implement further, configuration changes to the eDN system are needed, and additional pharmacy resource will be required.

Nomination Form

Celebrating Staff Excellence 2017

Our Celebrating Staff Excellence Awards recognise and celebrate the achievements and commitment of individuals and teams working for Medway NHS Foundation Trust.

Award winners are staff and volunteers who demonstrate that they go the extra mile for patients and colleagues. They will be great examples of team working, dedication, leadership and innovation, or role models of professionalism and courtesy, caring and compassion.

To nominate a colleague, please complete the form and send to Claire Hall, Clinical Systems, Residence 8 or email to IWL@medway.nhs.uk. If you have any questions, please contact Claire.Hall@medway.nhs.uk

Your nomination must be received by **30 March 2017** to count towards this year's awards.

Awards

Best Patient/Customer Care

This award recognises the outstanding contribution of a team or individual who has demonstrated compassion and a real understanding for the needs of others.

Best Innovation

This award is for an individual or team who have been innovative in enhancing service delivery in patient care or in delivery of their own particular service

Best Supporting Service

The Trust employs a number of support staff working alongside clinical colleagues to ensure the smooth-running of our hospital . This award is to recognise an individual or team amongst the support staff who consistently performs above and beyond the call of duty. Support staff can include housekeeping, corporate colleagues, porters and those working in an administrative role.

Best Volunteer of the Year

Recognition of our volunteers that help us carry out the day to day activities in the hospital and provide a necessary service to our patients.

Best Apprentice of the Year

This award is to recognise the contribution of our apprentices who are vital to the smooth running of the Trust.

Best Team and Employee of the Year

These are closed categories and will be made up of our monthly award winners from the previous 12 months, and also include the WoW award winners from the same period.

Details of the Person making this Nomination:

Name	Raliat Onatade
Job title	Interim Pharmacy Services Manager and Business Support
Department	Pharmacy
Extension number	3561

Please select the award category you are nominating in.

Please tick

Best Patient/Customer Care	<input type="checkbox"/>
Best Innovation	<input checked="" type="checkbox"/>
Best Supporting Service	<input type="checkbox"/>
Best Volunteer of the Year	<input type="checkbox"/>
Best Volunteer of the Year	<input type="checkbox"/>
Best Apprentice of the Year	<input type="checkbox"/>

Nomination details:

Name	Niksha Patel
Job title	Principal Pharmacist ED & Admission
Directorate	Acute and Continuing Care
Department	Pharmacy

My nomination is for the following initiative, led and implemented by Niksha Patel, Principal Pharmacist for ED and Admissions - **Pharmacists writing discharge medication prescriptions**

Delays to medication supply on discharge are often considered to be major barriers to timely patient discharge. However, the problem with obtaining discharge medication is often due to delays in doctors writing the prescription (eDN).

In January 2017, a new service, whereby a pharmacist took over writing discharge prescriptions, was introduced as a pilot on Lister Ward. Benefits were assessed.

The change was discussed with all healthcare professionals involved in the eDN process through 1:1 and group meetings and written information.

The following process was followed: The pharmacist liaised with the multidisciplinary team to identify patients fit for discharge and any urgently required eDNs. The pharmacist then discussed and confirmed discharge medication requirements with the doctor/team and patient. The pharmacist writes the list of discharge medication onto the eDN. The medication is dispensed either on the ward or in pharmacy. Meanwhile the doctor completes the clinical summary and checks the medication listed are still appropriate and correct. Once complete, the nurse prints the discharge letter and the patient is discharged.

The results of this task shift from doctors to pharmacist were immediate and remarkable.

When the pharmacist wrote the discharge medication list

Timeliness of discharge improved

- the percentage of patients discharged before noon increased by 13%.
- the average length of time between the decision being made that a patient was medically fit for discharge to the eDN being ready for dispensing was reduced by 1 hour 52 minutes.

Safety and Efficiency improved

- The percentage of medications that had to be changed due to errors or other reasons reduced from 13% (doctors) to 1% (pharmacists).

Overall, when a pharmacist wrote discharge prescriptions, the process was streamlined, medication was ready earlier, and fewer changes to the prescription were needed. The length of stay per patient was potentially reduced by 2 hours. Other benefits included reducing patients' and staff stress, easing the bed situation and reducing doctors' and nurses' workload.

The project was so successful because of Niksha's enthusiasm, motivation and excellent relationships with her colleagues on Lister and within Pharmacy. She ensured that she identified potential problems before implementation and either resolved with or worked with others to devise different ways of working. She has been tenacious about collecting and analysing the data to demonstrate the impact of the work.

This initiative is suitable for implementation in other clinical areas. Comments from the MDT included:

"This is the best idea ever, patients often miss their transport or Package of Care or Home First slot because the doctors have not done their eDNs. If the medications section is transcribed by a pharmacist the discharges would be more efficient" General Manager

"This is a really good idea; it really helps facilitate discharge of patients especially when I am by myself." Medical Registrar, Lister Ward

"It is a really useful service as once the medication section is complete the pharmacist would let me know so I can chase the doctors to complete their bits so I can quickly discharge the patient without delay." Nurse in charge, Lister Ward

PW21

Potentially Inappropriate Prescribing in Patients on
Admission and Discharge from an Older Peoples' Unit
of an Acute UK Hospital

R Onatade, V Auyeung, G Scutt, J Fernando

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Drugs & Aging

ISSN 1170-229X

Drugs Aging

DOI 10.1007/s40266-013-0097-5



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Potentially Inappropriate Prescribing in Patients on Admission and Discharge from an Older Peoples' Unit of an Acute UK Hospital

Raliat Onatade · Vivian Auyeung ·
Greg Scutt · Jasmine Fernando

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Abstract

Background The Screening Tool of Older Persons' potentially inappropriate Prescriptions (STOPP) classifies 65 common drug issues found to contribute to inappropriate prescribing in the elderly. International studies using STOPP criteria indicate high potentially inappropriate medication (PIM) prevalence rates; however, no studies have been conducted in older patients in UK hospitals. Published literature has not assessed whether prescribers attempt to minimise the potential risk of PIMs by putting in place follow-up or review plans.

Objectives The objectives of this study were (1) to determine prevalence and types of PIMs in older people admitted to and discharged from a UK hospital; and (2) to determine how often PIMs prescribed on discharge are accompanied by a plan for follow-up.

Methods This was a retrospective, non-randomised study conducted in the Specialist Health and Ageing Unit (HAU) of a 950-bed acute hospital trust in England, UK. The subjects were patients aged ≥ 65 years admitted to the HAU in June and July 2011. Data were obtained by applying STOPP criteria to electronic admission and discharge medication lists. Parametric and non-parametric tests were

performed to assess variables and to detect differences between groups. A PIM index was calculated by dividing the total number of PIMs by the total number of medications.

Results Medication lists for 195 patients were assessed. Median age was 85.5 years. The median number of admission medicines was nine. A total of 66 patients (34 %) were prescribed more than ten medications. The median number of discharge medicines was ten, with 80 patients (41 %) prescribed more than ten medicines. Admission PIM prevalence was 26.7 % (95 % CI 20.5–32.9; 52 patients, 74 PIMs). The most common PIM categories on admission were central nervous system (CNS) and psychotropic drugs, drugs adversely affecting patients at risk of falls and drugs acting on the urogenital system. The likelihood of having a PIM on admission was doubled in patients receiving more than ten medications compared with those taking fewer (odds ratio 2.3 [95 % CI 1.2–4.4]; $p = 0.01$). Discharge PIM prevalence was 22.6 % (95 % CI 16.7–28.5; 44 patients, 51 PIMs). PIMs reduced significantly on discharge ($p = 0.005$). The most common discharge PIMs were drugs adversely affecting patients at risk of falls, CNS and psychotropics, urogenital drugs and cardiovascular agents. Advice for general practitioners to monitor medication was documented on the discharge summary of three patients. An index was developed, based on the ratio of PIMs to medication totals. The PIM index complements the assessment of PIM prevalence and allows comparison of prescribing appropriateness between populations and between studies by taking into account the total amount of prescribed medication. Despite an increase in medication prescribed, the PIM index (rate) decreased from 0.043 on admission to 0.027 at discharge.

Conclusions Admission to a specialist HAU was associated with a significant reduction in PIMS. Very few

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patients discharged with a PIM had a documented follow-up plan. PIM prevalence was lower than published rates found internationally. Similar studies in settings of varying types across the UK are needed.

1 Introduction

The use of potentially inappropriate medicines (PIMs) in older people involves a greater risk of adverse events, hospitalisation, mortality and increased healthcare costs [1, 2]. A PIM is defined as a medication that should be avoided among patients 65 years or older either because it is ineffective or because associated adverse effects outweigh potential benefits, and a safer alternative exists [3]. The underuse of indicated medications has also been cited as inappropriate prescribing (IP) [4].

Various tools have been developed to identify, assess and improve the use of medication that may be inappropriate for older people [5–8]. One of the more recent tools, the Screening Tool of Older Persons' potentially inappropriate Prescriptions (STOPP) has gained popularity because of its ease of use, widespread applicability in Europe (it was developed in Ireland) and reported good inter-rater reliability [9, 10]. STOPP classifies 65 common drug issues found to contribute to IP in the elderly. Studies published so far using this tool indicate high PIM prevalence rates internationally [11–16]. A prospective study assessing the prevalence of potentially inappropriate prescribing (PIP) in acutely unwell patients admitted to six European hospitals found an overall PIM prevalence rate of 51.3 %, with a range of 34.7–77.3 % [11]. Two prospective studies undertaken in elderly patients admitted to Irish hospitals reported PIM prevalence rates of 35 and 56 % [12, 13]. A cross-sectional study carried out in Spain found PIM rates of 54 % in a hospital geriatric clinic, 36 % in a primary care clinic and 50 % in a private nursing home [14]. A 34 % PIM rate was obtained in a retrospective Irish primary care national study [15]. A lower rate of 21 % was found in another study of older people in primary care using case records [16]. So far, no studies have been conducted in older patients in UK hospitals. The differences in health systems, prescribing culture and clinical pharmacy input between the UK and other European countries mean that one cannot assume that PIM types or prevalence rates are similar.

Studies comparing prevalence of PIMs at admission and discharge from healthcare settings are conflicting [17–19]. There is little information on whether admission to hospital (with the opportunity for in-depth review of medication) has any effect on the appropriateness of medication. Furthermore, there will be some instances where there is no option but to prescribe a PIM for an older patient.

Published literature has not assessed whether prescribers attempt to ameliorate the potential risk of PIMs by putting in place a review or follow-up plan. A final consideration in assessing PIM prescribing is that due to the various tools and methodologies in use it is not possible to directly compare PIM rates between studies and settings. Standardising the method of measuring PIM rates would help in understanding the scale of the issue in the population being studied.

Given the gaps identified in the literature, this study was designed to, firstly, determine the prevalence and types of PIMs in older people admitted to, and discharged from, a Health and Ageing Unit (HAU) in an acute UK teaching hospital; and, secondly, to determine how often PIMs prescribed on discharge were accompanied by a plan for review, follow-up or monitoring.

2 Methods

This was a retrospective study, set in the HAU of a large (950 beds) acute teaching hospital trust in England, UK. The unit, comprising three wards with a total of 79 beds, assesses, treats and rehabilitates frail older people, particularly those with dementia, delirium, fractures and falls.

2.1 Subjects

The hospital's electronic patient record (EPR) system was used to identify all patients discharged from the HAU over a 2-month period in 2011. Patients were included if they were 65 years of age or above on admission (as per validated tool) and if their clinical information and medical records (including medication orders) were available electronically.

2.2 Data Collection

Relevant clinical data were abstracted from the EPR and the Electronic Prescribing and Medication Administration (EPMA) systems, including past medical history, history of falls, reason for admission, full medication history ('gold standard' as confirmed and documented by a pharmacist) on admission, discharge medication list, and any documented monitoring, follow-up or review plans for discharge medication. Regular and as required medication were included. Over-the-counter medication not prescribed on admission or in discharge orders was excluded. Admission and discharge medication lists were reviewed for any medication and medication–disease combinations that appear in the STOPP criteria. In addition, any documentation in individual patient records regarding possible issues with the use of a PIM was noted. For criteria that

required knowledge of how long the patient had been taking a particular medicine, medication records from previous admissions, letters or clinic attendances were checked. Primary care records were not checked for this information. If information on the length of therapy or previous medical history was required but not available, the criterion was marked as not applicable, i.e. a PIM was not detected. Patients who died during admission were excluded. As this study was deemed to be service evaluation, ethics approval was not needed, in accordance with our institution's criteria.

2.3 Statistical Analysis

Statistical analysis was performed using PASW version 20 for Windows (SPSS™, Inc., Chicago, IL, USA). D'Agostino and Pearson omnibus and Shapiro–Wilk normality tests (Graphpad Prism 5) were used to assess normality and subsequent selection of statistical test. Descriptive statistics were used to describe the data. Student's *t* test (matched or unmatched, as appropriate) was used to test relationships involving age and numbers of admission and discharge medicines. Spearman's rho was employed to explore relationships between the remaining variables. Wilcoxon signed-ranks test for related samples and Mann–Whitney *U* for unrelated samples were used to detect differences between groups. Standard multiple regression was employed to detect risk factors for PIMs. One-way analysis of variance (ANOVA) was used to test for relationship between the number of prescribed medicines and PIMs on admission or at discharge. All data were reported as mean ± standard deviation (SD) unless stated otherwise.

A PIM index for the patients admitted with at least one PIM was calculated by dividing the total number of PIMs by the total number of medications.

3 Results

3.1 Sample Characteristics

A total of 229 discharges were reviewed; 34 patients were excluded due to incomplete information ($n = 3$), death as an inpatient ($n = 21$) or being under the age of 65 at admission ($n = 10$). Therefore, admission and discharge medication lists for 195 patients were assessed. Table 1 describes the characteristics of the participants.

3.2 Number of Drugs on Admission and Discharge

Table 2 provides details of the numbers of medicines prescribed to patients, both on admission to the HAU, and on discharge. The mean number of medications prescribed

Table 1 Characteristics of the study population

Characteristic	<i>n</i> (%) ^a
Female	108 (55)
Median age at admission (range) [years]	85.5 (65–100, IQR 80–90)
65–74 years	20 (10)
75–84 years	73 (37)
85 years and above	102 (52)
Median length of stay (range)	19 days (3–239, IQR 12–37)

IQR interquartile ratio

^a Except where otherwise indicated

Table 2 Number of medications prescribed on admission and discharge

	<i>n</i> (%) ^a
Medication on admission	
Total	1,711
Median (range)	9 (0–20, IQR 6–12)
No medication	7 patients (4)
1–3 medications	17 patients (9)
4–6 medications	33 patients (17)
7–10 medications	72 patients (37)
>10 medications	66 patients (34)
Medication at discharge	
Total	1,887
Median (range)	10 (0–21, IQR 7–12)
No medication	3 patients (2)
1–3 medications	7 patients (4)
4–6 medications	33 patients (17)
7–10 medications	72 patients (37)
>10 medications	80 patients (41)

IQR interquartile ratio

^a Except where otherwise indicated

per patient increased significantly from admission to discharge (mean on admission = 8.8 ± 4.5 , and mean on discharge = 9.7 ± 3.9 ; matched samples Student's *t* test, $t [194] = -3.8$; $p < 0.0005$). Of these patients, three (1.5 % of the total population) were reported as each taking 20 medications when they were admitted. On discharge, of the 80 patients taking more than ten medications, one patient had 20 prescribed medications, and a second patient was prescribed 21 medications.

3.3 Number of Potentially Inappropriate Medications (PIMs) on Admission

At least one PIM was identified in the admission medication of 52 patients, giving a prevalence of 26.7 % (95 % CI 20.5–32.9), i.e. 74 PIMS were identified in 52 patients. One patient was admitted with four PIMs, and a PIM was

identified in all patients taking 20 medications. Median ages of patients with at least one PIM and those without a PIM on admission were 84.8 and 85.8 years, respectively, demonstrating a similarity of age between the two groups of patients.

Of the 65 STOPP criteria, 26 (40 %) were represented at admission. Tables 3 and 4 give more detail on the PIMs and their distribution.

The most common PIM categories on admission, in descending order of frequency, were central nervous system (CNS) and psychotropic drugs (34 %), drugs adversely affecting patients at risk of falls (20 %) and drugs acting on the urogenital system (18 %).

PIM prevalence at admission was 26.9 % in females and 26.4 % in males. There was no effect of sex on the number of admission PIMs (Mann–Whitney U ; $p = 0.895$).

The likelihood of having a PIM was more than doubled in patients receiving more than ten medications compared with those receiving ten or fewer (odds ratio = 2.3 [95 % CI 1.2–4.4]; $p = 0.01$).

Multiple regression was performed to test the effect of patient variables on the number of PIMs on admission, using age, number of admission medications and sex as predictor variables ($R^2 = 0.094$; $p < 0.0001$). The only significant predictor was the number of admission medicines ($p < 0.0001$). Figure 1a shows the relationship between number of PIMs and number of admission medicines.

3.4 Number of PIMs on Discharge

Table 4 shows the number of patients with none, one, two or three PIMs at admission and discharge. The most common discharge PIMs were drugs adversely affecting patients at risk of falls (33 %), CNS and psychotropics (31 %), urogenital drugs (14 %) and cardiovascular agents (14 %).

Of the 65 STOPP criteria, 23 (35 %) were represented in discharge medication. PIM prevalence at discharge was 22.6 % (95 % CI 16.7–28.5), i.e. 51 PIMs were identified in 44 patients, a reduction of 15 % in the number of patients with a PIM.

Multiple regression was performed to test the effect of age, sex and number of discharge medications as predictors of PIMs on discharge ($R^2 = 0.056$; $p = 0.012$). The only significant variable was the number of discharge medications ($p = 0.004$). Adding length of stay to the model improved the effect slightly ($R^2 = 0.069$; $p = 0.009$). Figure 1b shows the relationship between number of PIMs and number of discharge medicines.

3.5 Comparison between Admission and Discharge PIMs

Because of the relationship identified earlier between the number of medicines prescribed and the total number of

PIMs, we would expect more PIMs to be prescribed on discharge. However, we found that the number of PIMs prescribed on discharge decreased significantly from admission (mean = 0.38 ± 0.73) to discharge (mean = 0.26 ± 0.53); $p < 0.005$, Wilcoxon signed-ranks test. Normalising the number of PIMs to the number of prescribed medicines, creating a PIM index, produced mean values that were significantly smaller on discharge (mean \pm SD: 0.152 ± 0.075) compared with admission (mean \pm SD: 0.068 ± 0.087), (Wilcoxon signed-ranks test $Z = -5.45$; $p < 0.0001$, $r = 0.54$).

Table 5 shows that 20 of the 52 patients admitted with a PIM were discharged without any PIMs. Eleven patients (6%) had a reduction in the PIMs they were prescribed, but were still discharged with at least one PIM. One patient, at risk of falls, had both PIMs (a loop diuretic and a tricyclic antidepressant [TCA]) stopped and a new one (an opiate) introduced. Twenty patients (10 %) were discharged with the same number of PIMs, although four had changes in the type of PIM. Examples of these include a patient with dementia whose prescribed TCA was stopped and a first-generation antihistamine was prescribed as an alternative. A second patient at risk of falling had their prescribed opiate discontinued and a neuroleptic initiated instead. A third patient had an inappropriately high dose proton pump inhibitor (PPI) stopped, but was then commenced on a long-acting benzodiazepine. In a fourth patient, a high dose of a PPI was again stopped, but an opiate was prescribed. After a review of the medical history, the opiate was deemed potentially inappropriate according to STOPP (the patient had dementia).

Examples of PIMs introduced during admission were a calcium channel blocker (CCB) in the presence of chronic constipation (1/51), loperamide to treat diarrhoea of unknown cause (1/51), prolonged prescription of a first-generation antihistamine (2/51), a non-steroidal anti-inflammatory drug for mild osteoarthritic pain (1/51), neuroleptics (1/51) and opiates (1/51) in patients at risk of falls and opiates in dementia (1/51). Overall, 23 PIMs (23/74; 31 %) were discontinued before discharge. Numbers of PIMs were reduced or unchanged in all categories except in drugs to be avoided in patients at risk of falls and analgesic drugs (see Table 2).

Overall, according to STOPP criteria, 16 % of patients (i.e. 31 patients) had an improvement in the appropriateness of their prescriptions, while 7 % of patients (i.e. 13 patients) had their medication made less appropriate.

3.6 Monitoring/Follow-Up/Advice for PIMs Prescribed on Discharge

For three patients (four PIMs), advice for their general practitioners (GPs) to monitor medication was documented

Table 3 Potentially inappropriate medications identified on admission and discharge

PIM type	Admission PIMs (n = 74) [n (%)]	Discharge PIMs (n = 51) [n (%)]	PIMs with advice/ follow-up plans on discharge
A. CVS			
2. Loop diuretic for dependent ankle oedema only, i.e. no clinical signs of heart failure	3	1	
3. Loop diuretic as first-line monotherapy for hypertension	1		
8. CCBs with chronic constipation	3	4	1
12. Aspirin at dose >150 mg/day	1		
13. Aspirin with no history of coronary, cerebral or peripheral vascular symptoms or occlusive arterial event	3	2	
17. Aspirin, clopidogrel, dipyridamole or warfarin with concurrent bleeding disorder	1		
Total number of CVS PIMs	12 (16)	7 (14)	
B. CNS and psychotropic drugs			
1. TCAs with dementia	4	1	
2. TCAs with glaucoma	1	1	
3. TCAs with cardiac conductive abnormalities	3	2	
4. TCAs with constipation	4	3	
5. TCAs with an opiate or CCB	2	1	
6. TCAs with prostatism or prior history of urinary retention.	1		
7. Long-term (i.e. >1 month), long-acting benzodiazepines	4	2	2
9. Long-term neuroleptics (>1 month) in those with parkinsonism	3	1	
13. Prolonged use (>1 week) of first-generation antihistamines	3	5	
Total number of CNS and psychotropic PIMs	25 (34)	16 (31)	
C. GI system			
1. Diphenoxylate, loperamide or codeine phosphate for treatment of diarrhoea of unknown cause		1	
4. PPI for peptic ulcer disease at full therapeutic dosage for >8 weeks	3		
Total number of GI system PIMs	3 (4)	1 (2)	
E. Musculoskeletal system			
4. Long-term use NSAID (>3 months) for relief of mild joint pain in osteoarthritis		1	
8. Long-term NSAID or colchicine for chronic treatment of gout where there is no contraindication to allopurinol	1		
Total number of musculoskeletal PIMs	1 (2)	1 (2)	
F. Urogenital system			
1. Bladder antimuscarinic drugs with dementia	2	1	
3. Bladder antimuscarinic drugs with chronic constipation	1		
5. α -blockers in males with frequent incontinence, i.e. one or more episodes of incontinence daily	3	3	
6. α -blockers with long-term urinary catheter in situ, i.e. more than 2 months	7	3	
Total number of urogenital PIMs	13 (18)	7 (14)	
H. Drugs that adversely affect those prone to falls (≥ 1 fall in past 3 months)			
1. Benzodiazepines	2	2	
2. Neuroleptic drugs		1	
3. First-generation antihistamines	1	1	
4. Vasodilator drugs known to cause hypotension in those with persistent postural hypotension	2	2	
5. Long-term opiates in those with recurrent falls	10	11	1
Total number of PIMs due to adverse effects on those prone to falls	15 (20)	17 (33)	

Table 3 continued

PIM type	Admission PIMs (n = 74) [n (%)]	Discharge PIMs (n = 51) [n (%)]	PIMs with advice/ follow-up plans on discharge
I. Analgesic drugs			
3. Long-term opiates in those with dementia unless indicated for palliative care or management of moderate/severe chronic pain syndrome		1	
Total number of analgesic PIMs	0	1 (2)	
J. Duplicate drug classes			
Any duplicate drug class prescription	5	1	
Total number of duplicate drug classes	5 (7)	1 (2)	

CCB calcium channel blocker, CNS central nervous system, CVS cardiovascular system, GI gastrointestinal, NSAID nonsteroidal anti-inflammatory drug, PIM potentially inappropriate medication, PPI proton pump inhibitor, TCAs tricyclic antidepressants

Table 4 Potentially inappropriate medication distribution at admission and discharge

Number of PIMs	Number of patients (%) n = 195	
	Admission	Discharge
No PIMs	143 (73)	151 (77)
One PIM	36 (18)	38 (19)
Two PIMs	11 (6)	5 (3)
Three or more PIMs	5 (3)	1 (1)
Total number of patients with at least one PIM	52 (27)	44 (23)

PIM potentially inappropriate medication

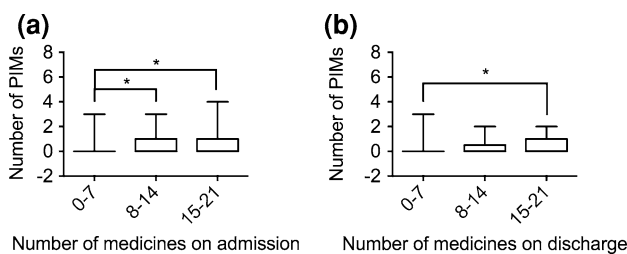


Fig. 1 Whisker and box plots representing the relationship between the number of potentially inappropriate medications (PIMs) and the number of prescribed medicines. **a** On admission, the number of PIMs increased with the number of prescribed medicines ($p = 0.0074$, Kruskal–Wallis; $*p < 0.05$ Dunn's multiple comparison). **b** On discharge, there was also a relationship between the number of prescribed medicines and the number of PIMs ($p = 0.0191$, Kruskal–Wallis); however, multiple comparison tests revealed a significant difference only between patients taking 0–7 medicines and those taking 15–21 ($*p < 0.05$, Dunn's multiple comparison)

on the discharge prescription. For two patients, this was for benzodiazepines and, in one patient prescribed a CCB with a history of constipation and an opiate with a history of falls, the GP was asked to review the analgesia and 'bowels'. Removing these patients from the number prescribed at least one PIM gives an adjusted PIM prevalence at discharge of 21 %.

4 Discussion

This report describes the results obtained when the STOPP tool was retrospectively applied to medication lists of older people at admission to and discharge from an acute specialist older peoples' unit in a UK teaching hospital. The prevalence of PIMs was found to be 27 % on admission, a figure that significantly improved at discharge to 22.6 %, despite an increased medication burden. There was a significant association between polypharmacy and PIMs, confirming previous findings [12, 15, 20–23].

An index was developed based on the ratio of PIMs to medication totals. The PIM index complements the assessment of PIM prevalence and allows comparison of prescribing appropriateness between populations and between studies, by taking into account the total amount of prescribed medication. A smaller PIM index for a population signifies potentially more appropriate prescribing in that population. In the patients in this study, the discharge PIM index was lower at discharge than at admission (0.027 vs. 0.043, 37 % reduction). In the subset of patients originally admitted with a PIM, the change in PIM index was larger (0.068 vs. 0.152, a 55 % reduction), demonstrating that admission to hospital had a marked beneficial effect on

Table 5 Changes in potentially inappropriate medication between admission and discharge

At least one PIM on admission	All PIMs stopped	PIMs reduced in number	Number of PIMs unchanged	PIMs introduced
52 patients ^a (27 %)	20 patients (10 %)	11 patients (6 %)	20 patients (10 %)	13 patients (7 %)

PIM potentially inappropriate medication

^a The number of patients with PIM changes is greater than 52 as some patients had new PIMs introduced although their total number of PIMs was reduced. Additionally, some patients had PIMs stopped but new ones introduced at the same time

PIP. This simple metric is also potentially valuable at the individual patient level. However, this study did not investigate the validity of the PIM index to accurately predict adverse drug events (ADEs) or other poor outcomes. This could be a limitation to its use at both the population and the individual patient level. For example, although two populations may have the same PIM index, it should not be assumed that the ADE risk is equivalent. Additionally, this metric is only valid as a measure of the quality of prescribing if all drugs on the STOPP criteria are equally inappropriate. Further work is needed to determine the accuracy of the PIM index in determining the quality of prescribing and to possibly identify patients at risk of ADEs.

Of the 65 STOPP criteria, 26 (40 %) were found in admission medication, reducing to just over one-third of the criteria at discharge. These figures are smaller than in other published studies, where at least 50 % of STOPP criteria are seen. Notably, the European study in a similar patient population encountered 86 % of STOPP criteria [11], while a French study in patients with psychiatric comorbidities encountered 62 % of STOPP criteria in their population [24].

The most common PIMs were those associated with the CNS and the cardiovascular system, drugs to avoid in patients at high risk of falls, and drugs used in the urogenital system. These drug types are similar to those reported in other studies, but, of note, long-term prescriptions for full-strength PPIs were not an issue in this patient population, although common elsewhere [11, 13, 15, 22]. Admission to hospital led to reductions and changes in the types of PIMs seen; however, inappropriate opiates and drugs adversely affecting those prone to falls both increased. The majority of PIMs in this category were long-term opiates, possibly pointing to an area in which prescribing could be improved further.

There have not been any previous published reports assessing how often clinicians acknowledge the unavoidable need to prescribe potentially inappropriate medicines and then put measures in place to minimise the risk to the patient. Despite the comparatively low prevalence, approximately one-quarter of the patients reviewed were still exposed to PIMs. Only a very small proportion of this

prescribing was explicitly acknowledged at discharge with advice or plans to review or stop the medication. This study could not determine whether or not the advice was acted on. Although prescribing appropriateness improved overall during the hospital stay, there is obvious scope for further improvement. Where a patient is prescribed medication that is deemed essential but also potentially inappropriate, the decision should ideally be documented and attempts made to lessen potential adverse effects by communicating the need for monitoring and follow-up. In England, the newly introduced community pharmacist post-discharge Medicines Use Review programme could be used for such a purpose.

There are some limitations to this study. The main one is that it was a single-centre study, conducted in a specialist older people's unit of a large urban teaching hospital. Our findings therefore need to be confirmed in other UK centres. Whilst we did investigate risk factors for increased PIMs, we did not find that any of our variables had a large effect and therefore our patients had other, unaccounted for, predictors of PIP. We did not include morbidity or co-existing illnesses in our model. Other studies have not found these to be risk factors for PIMs according to STOPP [22, 24], although increasing co-morbidity is associated with PIP [2, 16], possibly as a consequence of adverse reactions to inappropriate medications [1, 2]. Determining the factors associated with PIMs was not one of the main objectives of this study, but further studies are needed to assess this. A limitation that potentially led to underestimating PIM prevalence was our inability to check primary care records for those drugs that are inappropriate when prescribed long term. This is a common limitation in retrospective studies. In this study, this issue was only relevant for admission PIMs, as discharge medicines without a stated duration were considered to be prescribed long term by default. We did have some minor criticisms of STOPP when applied to our patient population. Potentially inappropriate opiates featured commonly in the admission and discharge medication of our patients. Most of these were combination analgesics with weak opiates; however, STOPP does not distinguish between weak and strong opiates in patients at risk of falls. The need for adequate analgesia should be balanced by the potential risk in this

patient group. The other drug type that may not always be inappropriate is the CCB amlodipine. The use of CCBs in the presence of chronic constipation is deemed inappropriate according to STOPP. Amlodipine, a dihydropyridine, was the most common CCB seen in this study and it is known to be less constipating than the other CCBs, which are in a different sub-class with different side effect profiles. Yet STOPP does not distinguish between the different classes of CCBs. Taking these factors into account the 'true' prevalence of IP in our HAU may be even lower than we have reported.

This study adds to existing knowledge, as it is the first time STOPP has been applied to acutely unwell UK patients. Additionally, it has not previously been used to assess the impact of hospitalisation on medication appropriateness. There are no other UK studies with which to compare the results, so it is not possible to state whether our results represent the norm. However, STOPP studies conducted in similar settings in Europe and Ireland have shown greater PIM prevalence. These studies have had younger populations, fewer medications per patient and less polypharmacy [11–13] but higher PIM prevalence. The fact that, despite a significantly increased medication burden, the prevalence of PIMs reduced in our patients points to a possible focus on minimising IP in our HAU, especially the inappropriate use of medications acting on the CNS. One may also hypothesise that, in this HAU, clinicians initiate medication that is more likely to be appropriate and stop inappropriate prescriptions. Applying a tool such as the Screening Tool to Alert to Right Treatment (START), which aims to detect the underuse of appropriate medication [9], would enable this question to be answered.

5 Conclusions

We found that 26.7 % of patients in an older people's acute care unit were prescribed a PIM on admission. The PIM prevalence reduced to 22.6 % at discharge. The most common PIMs, at admission and discharge, were CNS and psychotropic drugs and drugs adversely affecting patients at risk of falls. Very little of this PIP was accompanied by a plan for monitoring or review on discharge. Our findings provide important baseline data and comparative figures for future work. Similar studies in acute settings of varying types across the UK are needed in order to assess prevalence and variations in prescribing practices. As this study was conducted in a specialist HAU, it should also be replicated in acute non-specialist wards.

Acknowledgments The authors thank Emily Knight and Ewa Maryniak for their contribution to data collection, and Professor David Taylor for his helpful comments. No sources of funding were

used to assist in the conduct of this study or the preparation of the manuscript.

Conflicts of interest The authors have no conflicts of interest that are directly relevant to the content of this study.

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The prevalence of potentially inappropriate prescribing in acutely unwell older people

Raliat Onatade, Parul Modha, Jasmine Fernando, Emily Knight, Ewa Maryniak

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Background

- Potentially Inappropriate Prescribing (PIP): The use of medicines for which the risk of adverse drug events outweighs the therapeutic benefit, when safer, equally effective alternative therapies are available
- Underprescribing is a form of PIP
- Potentially Inappropriate Medications (PIMs) are associated with higher mortality and morbidity rates and increased healthcare costs

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The Problem

- International studies indicate that inappropriate prescribing is highly prevalent in older people
- Rates of between 35% and 77% have been found

The extent of inappropriate prescribing in older people in UK hospital settings is unknown

O'Connor M, Gallagher P et al. Inappropriate prescribing: criteria, detection and prevention. *Drugs Aging* (2012); 29

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Study Aims

- To determine the prevalence and types of PIMs in older people at admission to, and on discharge from, an acute UK teaching hospital
- To compare the prescribing of PIMs between patients in specialist older people's and non-specialist clinical areas

The Tool

The Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP) classifies common drug issues found to contribute to potentially inappropriate prescribing (PIP) to highlight PIMs in the elderly

- 65 rules relating to the most common and the most potentially dangerous instances of inappropriate prescribing in older people
- Developed in Ireland in 2008

Gaughan P, Ryan C, Byrne S et al. *International Journal of Clinical Pharmacology and Therapeutics* (2008); 46

Subjects and Setting

Patients 65 years or over at discharge from a 950-bed acute teaching hospital Trust

- Specialist - All patients discharged from the Healthcare of the Ageing Unit (HAU) between 30 May and 31 July 2011
- Non-Specialist - Randomly selected patients discharged from the acute non-HAU wards between 27 June and 31 July 2011

Exclusions: Patients who died during admission or whose clinical information was not available electronically

Method

- Data collectors were trained in the use of STOPP
- Admission and discharge medication lists were retrospectively reviewed for the presence of STOPP drugs
- Analysis: PASW (SPSS) v20 was used for statistical analysis

Population Characteristics

- Patient numbers
HAU = 195, Non-HAU = 336[†]
- Sex = Female
HAU = 55% (108/195), Non-HAU = 44% (148/336)
- Median age at admission
HAU = 85.5 years, Non-HAU = 76 years
- Median length of stay
HAU = 19 days (3 – 239), Non-HAU = 4 days (1 – 78)

[†] a priori sample size calculation indicated that 400 patients would give a 95% CI of +/- 3

Results - Medication

	HAU (n = 195)	Non-HAU (n = 336)
Total meds at admission	1711*	2631**
Total meds on discharge	1887*	3102**
Median no. of meds at admission	9 (0 - 20)	7 (0 - 24)
Median no. of meds on discharge	10 (0 - 21)	9 (0 - 24)
Patients on >10 meds on admission	34%	22%
Patients on >10 meds at discharge	41%	33%

* ** significant increase, p <0.005, paired samples t-test

Results - PIMs

	HAU (n = 195)	Non-HAU (n = 336)
PIM prevalence at admission (95% CI)	26.7% (20.5 - 32.9)	27.1% (23.4 - 30.8)
PIM prevalence at discharge (95% CI)	23% (16.7 - 28.5)	25.3% (21.7 - 28.9)
Number of PIMs at admission (mean, SD)	74 (0.38, 0.73)*	120 (0.27, 0.45)
Number of PIMs on discharge (mean, SD)	51 (0.26, 0.53)*	107 (0.25, 0.44)

*significant decrease, p <0.005, Wilcoxon Signed Ranks Test

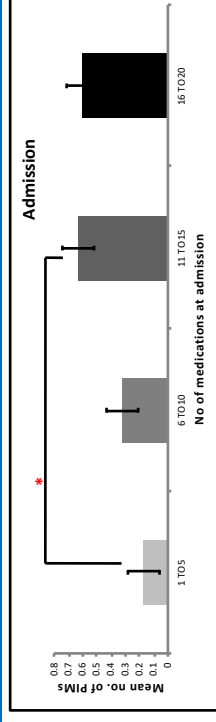
Overall PIM prevalence for total population of 531 patients was 26.9% (95% CI = 23.1% - 30.7%) at admission and 24.3% (20.7% - 28.0%) on discharge

- ### Results - PIM types
- At admission to HAU:
 - Common PIMs were those associated with tricyclic antidepressants, opiates and other drugs in patients at risk of falls, inappropriate alpha-blockers and duplicate drugs
 - On discharge, opiates and first generation antihistamines were increased
 - Non-HAU:
 - Most common: long-term high dose PPIs (34% and 33% of admission and discharge PIMs). Prescriptions for aspirin at doses greater than 150mg increased during admission

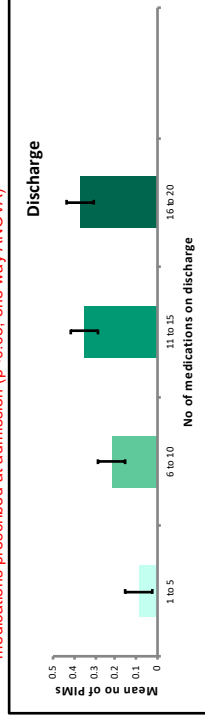
Post hoc analysis I

Patients admitted to the HAU and taking more than 10 medications had more than double the likelihood of having a PIM compared to those prescribed 10 or fewer (Odds Ratio = 2.3, 95% CI = 1.2-4.4)

Polypharmacy and PIMs



*There is a positive relationship between the no. of PIMs and the number of medications prescribed at admission ($p < 0.05$, one way ANOVA)



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Post hoc analysis II

- *PIM index* = No. of PIMs / Total number of medications
- Complements assessment of prevalence
- Allows comparison of prescribing appropriateness between studies
- A smaller PIM index for a population = more appropriate prescribing in that population, taking into account total amount of prescribed medication
- HAU patients - PIM index at admission = 0.043, discharge = 0.027
- Non-HAU patients - PIM index at admission = 0.046, discharge = 0.034
- *Gallagher and Mahony, 2008* - PIM index = 0.076, PIM prevalence = 35%
- *Hamilton et al., 2011* - PIM index = 0.135, PIM prevalence = 56.2%

Gallagher P, O'Mahony D, Age and Ageing (2008); 37
Hamilton H, Gallagher P, et al., Archives of Internal Medicine (2011);13

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Discussion

- PIM prevalence was lower than published rates from outside the UK
- Due to differences in prescribing culture/healthcare systems/clinical pharmacy input?
- Admission to a specialist HAU = statistically significant reduction in potentially inappropriate medication
- Polypharmacy again shown to be associated with inappropriate prescribing
- STOPP is a suitable tool for use in everyday practice, but needs updating

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Conclusions and Future Work

- This study provides a previously unknown baseline rate for PIM prevalence in acute UK hospital settings
- Pharmacists looking after older patients outside HAU should be extra-vigilant about potentially inappropriate medications
- Similar studies are needed in other settings to confirm findings

Thank you for listening

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Thanks to Greg Scutt and Dr. Vivian Auyeung for
additional statistical support

PW22

Evaluation of the Ordering and Cancelling of Inpatient
Prescriptions by Pharmacists using Electronic
Prescribing

V Austin, R Onatade

Introduction

Electronic Prescribing and Medication Administration (EPMA) has been live on all adult wards at King's College Hospital (KCH) since 2012. Prior to the use of EPMA it is unlikely that pharmacists would have hand-written and signed a prescription on a drug chart themselves, however the implementation of EPMA has given pharmacists access to full prescription ordering rights. A pharmacist can now generate an order on a drug chart which is immediately active for administration and this has potentially changed the way pharmacists are practicing. Documentation is vital to ensure that interventions made by pharmacists are clear, both for patient safety and continuity of care, and where quality of care could be challenged contractually or legally^{1,2}. This service evaluation aims to look at how much pharmacists are generating and cancelling drug orders, whether pharmacists are documenting their changes and whether their documentation is adequate to support pharmacists from a legal standpoint.

Objectives

- Determine the percentage of orders made and cancelled by pharmacists over a 6 month period
- Review the types of drugs commonly ordered and cancelled by pharmacists.
- Determine what percentage of a sample of orders made or cancelled by pharmacists have a reason fully documented
- Determine where possible the reasons orders are being prescribed or cancelled by pharmacists

Method

All inpatient prescriptions ordered or cancelled by pharmacists between June and November 2012 were retrospectively identified using EPMA. The following orders were excluded:

- 1) Medication history and discharge orders
- 2) Any orders prescribed or cancelled in non-ward locations
- 3) All non-drug and fluid orders
- 4) Orders prescribed or cancelled on wards not using electronic clinical notes

75 new orders and 75 cancelled orders were randomly selected using Excel. A new order includes changing an existing order e.g. switching formulation, and entirely new prescriptions. Using EPMA and electronic clinical notes the reasons for generating and cancelling orders and their documentation were identified. Where no reason was documented clinical judgement was used in order to identify a reason. A reason was considered to be fully documented if both the action taken and why it was taken was stated, and if the details of the action were documented but no reason why then this was considered to be partially documented. A reason could be documented by any member of the healthcare team.

The data was recorded on a pre-piloted data collection form and the results analysed using Microsoft Excel. As this was a service evaluation, ethics approval was not required in accordance with organisational policy.

Results

1. A total of 344,083 prescriptions were ordered using EPMA between June and November 2012. 7% (23,215) of these were made by pharmacists. Of the sample of new orders analysed 59% (44/75) were entirely new prescriptions, the remaining 41% (31/75) were to make a change to an existing order. 119,077 prescriptions were cancelled, 21% (24,608) of which were cancelled by pharmacists.
2. Analgesia, inhalers, laxatives, proton pump inhibitors (PPIs), enoxaparin and Calceos were the most commonly ordered drugs by pharmacists. The top three being, omeprazole (4%, 819), Calceos (3%, 785) and paracetamol (3%, 742). The drugs most commonly cancelled by pharmacists were morphine sulphate injection (6%, 1462), PPIs (4%, 903), paracetamol (multiroute) (3%, 813) and enoxaparin (3%, 810).
3. The level of documentation of reasons for new and cancelled orders made by pharmacists is shown in table 1.

Table 1: The extent of documented reasons for new and cancelled orders

	Full documentation	Partial documentation	No documentation
New orders (n=75)	33% (25)	12% (9)	55% (41)
Cancelled orders (n=75)	49% (37)	24% (18)	27% (20)

4. For 28% (21/75) of new orders no clear reasons for prescribing could be found, 33% (25/75) had reasons fully documented but clinical judgement was needed to identify reasons for the remaining 39% (29/75). Where reasons were identified, most commonly orders were made by pharmacists to reconcile drug histories (31% 17/54) and to bring prescribing in line with KCH guidelines (15% 8/54). No clear reason could be found for 18% (13/75) of cancelled orders, 49% (37/75) had reasons fully documented and clinical judgement was used to identify reasons for the remaining 33% (25/75). Where reasons were identified, most commonly orders were cancelled due to prescription duplication (24% 15/62), to reconcile drug histories (18%, 11/62) and to bring prescribing in line with KCH guidelines (13%, 8/62)

Discussion

This data shows that pharmacists at KCH are generating on average 4000 new orders a month. Of these new orders over half (55%) had no documentation and 28% had no identifiable reason. Pharmacists are cancelling a fifth of all cancelled orders and full documentation is occurring in half (49%) of these cases. However the detail of information recorded to determine why a prescription was cancelled was not sufficient in 18% of cases. This shows that whilst documentation is occurring it is not standard practice and it is often not sufficient to determine why a new order has been made or one has been cancelled. It is likely that electronic prescribing has made changing prescriptions more commonplace but it has not encouraged good documentation to support this. When considering the drugs most commonly prescribed by pharmacists and the reasons identified the results show that pharmacists are often initiating new orders to optimise patient's drug therapy. When considering the types of drugs most frequently cancelled and the documented reasons, the results suggest that pharmacists are more likely to be discontinuing therapies for safety reasons, for example to remove duplicated prescriptions.

These results show standardisation of what is recorded, when and where is needed along with education on the implications of pharmacists not documenting their actions. A wide variety of orders are being made and cancelled and are occurring for many different reasons and it may also be prudent to produce recommendations for pharmacists on what is appropriate.

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Evaluation of the Ordering and Cancelling of Inpatient Prescriptions by Pharmacists using Electronic Prescribing

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Introduction

Electronic Prescribing and Medication Administration (EPMA) has been live on all adult wards at King's College Hospital (KCH) since 2012. Prior to the use of EPMA it is unlikely that pharmacists would have hand-written and signed a prescription on a drug chart themselves, however the implementation of EPMA has given pharmacists access to full prescription ordering rights. A pharmacist can now generate an order on a drug chart which is immediately active for administration and this has potentially changed the way pharmacists are practicing. Documentation is vital to ensure that interventions made by pharmacists are clear, both for patient safety and continuity of care, and where quality of care could be challenged contractually or legally^{1,2}.

This service evaluation aims to look at how much pharmacists are generating and cancelling drug orders, whether pharmacists are documenting their changes and whether their documentation is adequate to support pharmacists from a legal standpoint.

Objectives

1. Determine the % of orders made and cancelled by pharmacists over a 6 month period
2. Review the types of drugs commonly ordered and cancelled by pharmacists
3. Determine what % of a sample of orders made or cancelled by pharmacists have a reason fully documented
4. Determine where possible the reasons orders are being prescribed or cancelled by pharmacists

Method

All inpatient prescriptions ordered or cancelled by pharmacists between June and November 2012 were retrospectively identified using EPMA. The following orders were excluded:

- Medication history and discharge orders
- Any orders prescribed or cancelled in non-ward locations
- All non-drug and fluid orders
- Orders prescribed or cancelled on wards not using electronic clinical notes

75 new orders and 75 cancelled orders were randomly selected using Excel.

Using EPMA and electronic clinical notes where possible the reasons for generating and cancelling orders and their documentation were identified. Where no reason was documented clinical judgement was used in order to identify a reason

The data was recorded on a pre-piloted data collection form and the results analysed using Microsoft Excel.

Discussion

- Pharmacists are generating on average 4000 new orders a month. Of these new orders over half (55%) had no documentation and 28% had no identifiable reason.
- Pharmacists are cancelling a fifth of all cancelled orders and full documentation is occurring in half (49%) of these cases, documentation is not sufficient to determine why in 18% of cases.
- Whilst documentation is occurring it is not standard practice and it is often not sufficient to determine why a new order has been made or one has been cancelled. It is likely that electronic prescribing has made changing prescriptions more commonplace but it has not encouraged good documentation to support this.
- When considering the drugs most commonly prescribed by pharmacists and the reasons identified the results show that pharmacists are often initiating new orders to reconcile medication histories and optimise drug therapy.
- When considering the types of drugs most frequently cancelled and the documented reasons, the results suggest that pharmacists are more likely to be discontinuing therapies for safety reasons, for example to remove duplicated prescriptions.

Results

- A total of 344,083 prescriptions were ordered using EPMA between June and November 2012. 7% (23,215) of these were made by pharmacists.
- Of the sample of new orders analysed 59% (44/75) were entirely new prescriptions, the remaining 41% (31/75) were to make a change to an existing order.
- 119,077 prescriptions were cancelled, 21% (24,608) of which were cancelled by pharmacists.

Table 1: Top 10 drug items ordered by pharmacists

Drug Name	% of Total Pharmacist Generated Orders (n/23,215)
Omeprazole capsule	4% (819)
Calceos tablet	3% (785)
Paracetamol tablet	3% (742)
Enoxaparin injection	2% (593)
Drug Name	2% (459)
Dexamethasone tablet	2% (443)
Lansoprazole capsule	2% (374)
Senna tablet	2% (371)
Codeine phosphate tablet	2% (363)
Salbutamol aerosol inhaler	1% (343)

Table 2: Top 10 drug items cancelled by pharmacists

Drug Name	% of Total Pharmacist Cancelled Orders (n/24,608)
Morphine sulphate injection	6% (1462)
Paracetamol (multiroute)	3% (813)
Enoxaparin injection	3% (810)
Paracetamol tablet	3% (793)
Omeprazole capsule	2% (545)
Lansoprazole capsule	1% (358)
Morphine sulphate solution	1% (353)
Codeine phosphate tablet	1% (323)
Drug name	1% (301)
Senna tablet	1% (290)

Table 3: The extent of documentation for new and cancelled orders

	Full Documentation	Partial Documentation	No Documentation
New Orders (n=75)	33% (25)	12% (9)	55% (41)
Cancelled Orders (n=75)	49% (37)	24% (18)	27% (20)

- For 28% (21/75) of new orders no clear reasons for prescribing could be found, 33% (25/75) had reasons fully documented but clinical judgement was needed to identify reasons for the remaining 39% (29/75).
- No clear reason could be found for 18% (13/75) of cancelled orders, 49% (37/75) had reasons fully documented and clinical judgement was used to identify reasons for the remaining 33% (25/75).

Chart 1: Reasons identified for orders generated by pharmacists.

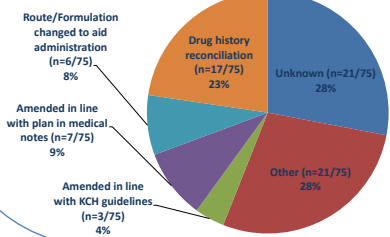
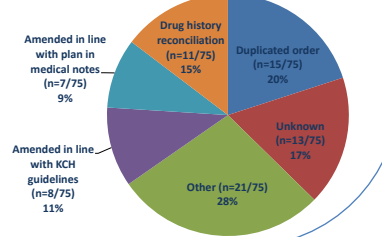


Chart 2: Reasons identified for orders cancelled by pharmacists.



Conclusion

These results show standardisation of what is recorded, when and where is needed along with education on the implications of pharmacists not documenting their actions. A wide variety of orders are being made and cancelled and are occurring for many different reasons and it may also be prudent to produce recommendations for pharmacists on what is appropriate.

References

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Policy for Pharmacists Amending Inpatient Orders on the Electronic Prescribing and Administration (EPMA) System

1. Introduction

Electronic Prescribing and Medication Administration (EPMA) system was introduced at Kings College Hospital in 2009 and has been successfully rolled out across the hospital. EPMA is now live on the majority of wards and is changing the way that pharmacists practice.

On the EPMA system pharmacists have prescribing rights to allow medication histories to be documented, discharge drug lists to be prepared and to allow the endorsement and amendment of inpatient medication orders. On paper charts there is clear differentiation between the prescribed medicine and changes made by the Pharmacy team, however this is not obvious on EPMA. Inpatient EPMA orders are live and available for administration as soon as they are initiated or changed on the system, regardless of whether the order is made by an authorised prescriber or pharmacist with ordering rights.

Clear guidance needs to be in place to establish the remit of pharmacists initiating and amending prescription orders and a standardised departmental approach is required.

2. Purpose

The purpose of this policy is to outline when pharmacists may initiate and amend EPMA inpatient orders, and how these actions must be documented.

3. Scope

This policy applies to all pharmacists at KCH who use EPMA. Technical pharmacy staff are restricted to modifying orders and endorsements.

This document does not relate to pharmacists working in accordance with their scope of practice as a supplementary or independent prescriber.

This policy covers all EPMA orders including medication, fluids, diluents and flushes.

4. Duties and responsibilities

The Director of Pharmacy is accountable for the systems and processes relating to the safe and secure handling of medicines.

Pharmacists must always practice within their level of competence. Pharmacists must be aware of the current legislation relating to the management of medicines in hospital and be clear about their professional responsibilities. Nothing in this policy overrides a pharmacist's responsibility to ensure prescriptions are safe to administer and/or supply.

5. Definitions

Medicines Reconciliation: the process of obtaining the patient's medication history then identifying investigating and resolving any discrepancies between the history and the prescribed inpatient orders. All intentional changes to the patient's regular medication should be communicated to the primary care team and patient or carer.

Initiating a medication order: the process of adding an inpatient order on EPMA. This order will schedule doses on the worklist manager, and is the equivalent of prescribing.

Policy for Pharmacists Amending Inpatient Orders on the Electronic Prescribing and Administration (EPMA) System

Amending an order: the process of cancelling the original order and creating a new inpatient medication order. This process also falls under the definition of prescribing.

6. Policy

If the pharmacist judges that an inpatient order may result in fatality or significant patient harm (for example, penicillin prescribed to a patient who has previously suffered an anaphylactic reaction to penicillin), the pharmacist must attempt to contact the prescriber urgently to cancel or amend the prescription immediately. If the prescriber or appropriate team member cannot be contacted immediately, the pharmacist should liaise with nursing staff to ensure the dose is not given and cancel the order. The prescribing team must be contacted as soon as possible after the change is made and an adverse incident form will need to be completed. An entry should also be made in the notes.

6.1 Pharmacists may initiate and amend inpatient orders on EPMA provided the medicine does not fall into one of the excluded groups listed below. For these excluded medicines, inpatient orders should only be initiated by the doctor or a non-medical prescriber caring for the patient.

6.1.1 List of medicines which must not be initiated or amended on EPMA by pharmacists:

- Controlled drugs (except when cancelling identical duplicate orders)
- Medication handled as controlled drugs (e.g. intravenous potassium)
- Cytotoxic drugs
- Chemotherapy
- Dietetic prescriptions
- Enteral feeds
- Oxygen
- Intravenous and subcutaneous fluids (ordered via a fluids order set)

6.2 When pharmacists initiate or amend an order on EPMA, the pharmacist initiating / amending the order must

- Contact the doctor responsible for the patient
- Make an entry in the medical notes

6.2.1 The entry in the patient notes should be in line with the departmental guidance (Writing in notes policy) and must include details of:

- What the initiated / amended order was
- Why the change was made
- The name and contact details of the doctor who was contacted

6.2.2 An entry in the medical notes must be made regardless of whether or not an order has been made using the “requested by other” tool.

6.3. There are a restricted number of circumstances in which pharmacists may initiate or amend orders on EPMA without contacting the doctor caring for the patient. Amendments which are not intended to change the intended outcome of the medication order or which relate to practical issues such as formulary, drug availability or device specification can be made without prior discussion with the prescriber. It is important that all pharmacists changing orders in this way document the reason in the dialogue box when requested on EPMA. An entry in the medical notes should be made to document changes to the patient’s drug chart.

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A change to an inpatient medication order can be made in the following circumstances without prior discussion with a prescriber:

6.3.1 Formulary therapeutic substitutions

- Movicol to Laxido
- Lansoprazole to Omeprazole
- Switches to Calceos when patient on a different non-Formulary brand of a calcium supplement

6.3.2 Compound Medication

When a medication is prescribed as a combination product which is not kept at the Trust e.g. co-codamol 30/500, co-amoxiclav 625mg, a pharmacist can amend an EPMA order to split the combination product into separate drug constituents. When a medication is split into individual constituents the new orders of the separate ingredients must be the same dose, route and frequency of the initial prescription. If the pharmacy department do not keep the strength required, the dose or drug may need to be changed in which case the prescriber would need to be contacted.

6.3.3 Devices

If an inhaler device has not been prescribed in accordance with the patient's drug history or documented recommendation of the respiratory team the device can be changed, providing that in doing so the dose or frequency is not altered. If an alteration to the dose or frequency is required the prescriber must be contacted before the change is made.

6.3.4 Unscheduled orders

Orders which have not been correctly scheduled on the work list manager (appearing as a dark blue or continuous yellow line) can be rescheduled to allow a nurse to administer a dose as long as the intention of the prescriber is clear / not ambiguous.

6.3.5 Drugs prescribed in a way which prohibits their safe and effective administration

Amendments can be made to a prescription where the formulation or dose timings prescribed prevent administration or could result in inappropriate administration.

Amendments can be made in the following instances:

- i. Oral Bisphosphonates prescribed at mealtimes can be amended to one hour before a meal
- ii. Changing formulation of an oral medication when required to facilitate oral administration when a patient has an enteral feeding tube. The formulation can only be changed when this does not require a change in dose.
- iii. Paediatric prescription orders may be amended from a solid oral dosage form to a liquid (if available) if the patient is not able to swallow the original formulation. The liquid alternative must be a licensed product and the amendment must not require a change in dose.
- iv. Paediatric orders which have been made using the adult catalogue can be changed to the exact identical order using the paediatric catalogue (#Catalogue).

6.3.6 Pharmacists working on a Consultant, post-take or antimicrobial ward round

Pharmacists attending a ward round can adjust, remove or add any drug in agreement with the doctor. Any changes must be documented in the medical notes.

**Policy for Pharmacists Amending Inpatient Orders
on the Electronic Prescribing and Administration (EPMA) System**

6.3.7 Duplicate and redundant prescriptions

- i. Pharmacists are able to cancel all duplicate items on EPMA where the drug, dose, route and frequency are identical on both orders. If possible it is advised to cancel the order which has not been administered against on the work list manager.
- ii. Pharmacists are able to cancel items on EPMA which are redundant.
Examples include:
 - Orders for morphine sulphate IV for administration in HDU/CCU when the patient has been transferred to medical ward or
 - Orders for PCAs where the PCA is no longer connected to the patient, and where the plan to stop the PCA has been documented in the medical notes by the medical or surgical team
 - Orders for sliding scales that are no longer running.

6.5 If the pharmacist cancels any order on EPMA as part of an amendment, a clear reason for cancelling the order e.g. unscheduled order should be entered into the 'reasons' dialogue box.

6.6 All pharmacists must perform a self-check after initiating or amending an EPMA order. Alternatively the prescription may be checked by another pharmacist or medical staff. It is recommended that entering and verifying orders is done separately to introduce a second check. All pharmacists must check / open the worklist manager after making a change to an EPMA order to ensure the prescription has scheduled as intended.

7. Relevant policies which link to this document

- Pharmacy Endorsing policy
- Writing in notes policy
- Medicines management policy
- Policy for medicines reconciliation on admission of adults to hospital
- Joint Medicines Formulary

PW23

Baseline Assessment of the Confidence, Knowledge
and Skills of Pharmacists when providing
pharmaceutical care to patients with Diabetes

Bell C., Callender N., Razouk R., Yerbury P.,

Shah R., Onatade R

OC1. Baseline Assessment of the Confidence, Knowledge and Skills of Pharmacists when providing Pharmaceutical care to patients with Diabetes

Bell, C., Callender, N., Razouk, R., Yerbury, P., Shah, R., Onatade, R., King's College Hospital, London

Background: Diabetes and the inpatient management of diabetes have been identified as a key learning need for pharmacists through the results of local and national studies¹. In this Trust, the rate of recorded pharmacist contributions is significantly lower for insulin than warfarin and other high risk medicines. However, there is a significant amount of evidence to show that many errors relating to insulin occur within the Trust. Anecdotal evidence from junior pharmacists suggests that a lack of confidence and skills in this clinical area contribute to insufficient pharmaceutical care of patients with diabetes.

An assessment exercise was undertaken at King's College hospital to evaluate the confidence, knowledge and skills of pharmacists to provide pharmaceutical care to patients with Diabetes.

Objective: To identify areas where educational interventions could improve the pharmaceutical care of patients with Diabetes across the Trust. An evaluation of confidence, knowledge and skills will identify educational needs and provide a basis on which to develop a training programme.

Method: Basic competencies describing a minimum standard for diabetes management were developed by a Diabetes working group comprising senior and specialist pharmacists in Education and Diabetes. The competencies cover key knowledge and skills areas and outline the level at which a junior pharmacist should be practising.

A questionnaire comprising demographic, confidence and knowledge and skills questions was devised by the Diabetes working group and then reviewed by a Consultant Diabetologist and Specialist Diabetes Nurse. The questionnaire was piloted on 2 occasions by different pharmacists with amendments made after each pilot. A four-point confidence rating scale was used: not confident, fairly confident, confident and fully confident. 15 multiple choice questions were used to test knowledge and skills, with only one correct answer per question. Each question was equally weighted with a correct answer given a mark of one.

The questionnaire was hosted on an online website, SurveyMonkey®. A link was emailed to all pharmacists and participants answered the questions on the website. The questionnaire was live for approximately two months (September to October 2013). Responses were downloaded onto MS Excel and analysed descriptively. Ethics approval was not required for this project as patient care was not altered in any way.

Results: A total of 78 pharmacists completed the questionnaire across both sites out of approximately 100 eligible pharmacists (78% response rate). Out of a total of 858 responses for the 11 confidence questions, only 22% (192 answers) were either confident or fully confident. Just 5% of respondents (4/78) rated themselves confident or fully confident in all topic areas.

Individual scores for knowledge and skills questions ranged from 0% (no questions answered) to 80% (12/15 correct – 1 respondent), mean score of 33%. If respondents who skipped all questions are excluded, the range of scores was 27% (4/15) to 80%, mean score of 47%.

Table 1.1 shows the results by topic and highlights the number of respondents who reported confidence *and* correctly answered the relevant question(s).

Table 1.1 Results of confidence, knowledge and skills evaluation by topic area

Topic area	Respondents reporting confidence* in this topic area	Knowledge and skills; No. of questions relating to this topic area	Knowledge and skills; Respondents with correct answers	Confident respondents with correct answers
Understanding blood glucose (BG) results and factors affecting these	22% (17/78)	1	18% (14/78)	6% (1/17)
Understanding and interpreting relationships between BG control and patient parameters	22% (17/78)	3	12% (9/78)	6% (1/17)
Pharmacology of oral hypoglycaemic agents	10% (8/78)	1	40% (31/78)	63% (5/8)
Pharmacology of insulin	Not asked	1	40% (31/78)	n/a
Ability to adjust an insulin regimen according to relevant patient parameters	10% (8/78)	2	21% (16/78)	50% (4/8)
Ability to advise on appropriate BG monitoring in the context of other disease states	Not asked	1	60% (47/78)	n/a
Management of diabetic ketoacidosis	Not asked	2	10% (8/78)	n/a
Selecting an appropriate insulin regimen for a patient	Not asked	1	8% (6/78)	n/a
Managing and advising on variable-dose IV insulin regimens	9% (7/78)	3	3% (2/78)	0% (0/7)
Managing hypoglycaemia	29% (23/78)	Not asked	n/a	n/a
Understanding micro- and macrovascular complications	28% (22/78)	Not asked	n/a	n/a

Conclusion: The assessment clearly demonstrates a lack of pharmacists' knowledge and skills in this area. The Diabetes working group plan to develop a training programme tailored to the educational needs highlighted in this assessment. The baseline assessment tool could be used across the NHS to quickly provide a baseline evaluation for any specific disease and identify priorities for training and development.

References

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BMC Health Services Research

An assessment of hospital pharmacists' confidence, knowledge and skills in providing care to patients with diabetes

--Manuscript Draft--

Manuscript Number:	BHSR-D-16-00796R1	
Full Title:	An assessment of hospital pharmacists' confidence, knowledge and skills in providing care to patients with diabetes	
Article Type:	Research article	
Section/Category:	Quality, performance, safety and outcomes	
Funding Information:	This project has no funding sources	Ms Charlotte Bell
Abstract:	<p>Background: The management of diabetes and glycaemic control in hospitalised patients is pharmaceutically complex and fraught with error. Hospital pharmacists have a significant role in ensuring the safe, appropriate care of patients with diabetes. The purpose of this study was to assess the confidence, knowledge and skills of hospital pharmacists in delivering care to, and supporting the management of, inpatients with diabetes.</p> <p>Methods: A two-part questionnaire was developed. The first section consisted of eleven questions and asked respondents to use a four-point scale to self-assess their confidence in delivering different aspects of pharmaceutical care to patients with diabetes. The second section comprised fifteen multiple-choice questions based on clinical scenarios. Each question had only one correct answer. All qualified pharmacists within the organisation were invited via email to respond to the online questionnaire.</p> <p>Results: Seventy-two respondents answered all confidence items, and fifty-two of these answered all knowledge and skills questions. The most common response in the confidence section was 'fairly confident to use this skill/apply knowledge without referring to a specialist team' (48% of all responses). 'Fully confident to use this skill/apply knowledge in assisting other pharmacists to make a recommendation' received 4% of all responses. 4/72 respondents (6%) were confident or fully confident in all aspects, and 27/72 (38%) answered not confident or fairly confident to all questions. There was no correlation between the number of years qualified and confidence scores. The mean knowledge and skills score for the fifty-two respondents was 47%, the highest score was 73% (two respondents). The percentage of respondents answering individual questions correctly ranged from 12% to 90% per question. For 6/15 questions, fewer than 50% of pharmacists gave a correct answer.</p> <p>Conclusions: The confidence, knowledge and skills of the surveyed pharmacists in all areas of pharmaceutical care for inpatients with diabetes, including monitoring and developing a treatment strategy, requires improvement. It would be appropriate for other organisations to carry out similar assessments in order to identify training needs and therefore improve the ability of pharmacists to support the care of hospitalised patients with diabetes.</p>	
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Response to Reviewers:	The authors' response letter has been included as a supplementary file.

27 **Abstract**

28 Background: The management of diabetes and glycaemic control in hospitalised patients is
29 pharmaceutically complex and fraught with error. Hospital pharmacists have a significant role in
30 ensuring the safe, appropriate care of patients with diabetes. The purpose of this study was to
31 assess the confidence, knowledge and skills of hospital pharmacists in delivering care to, and
32 supporting the management of, inpatients with diabetes.

33 Methods: A two-part questionnaire was developed. The first section consisted of eleven questions
34 and asked respondents to use a four-point scale to self-assess their confidence in delivering different
35 aspects of pharmaceutical care to patients with diabetes. The second section comprised fifteen
36 multiple-choice questions based on clinical scenarios. Each question had only one correct answer.

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38 questionnaire.

39 Results: Seventy-two respondents answered all confidence items, and fifty-two of these answered all
40 knowledge and skills questions. The most common response in the confidence section was 'fairly
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42 responses). 'Fully confident to use this skill/apply knowledge in assisting other pharmacists to make
43 a recommendation' received 4% of all responses. 4/72 respondents (6%) were confident or fully
44 confident in all aspects, and 27/72 (38%) answered not confident or fairly confident to all questions.

45 There was no correlation between the number of years qualified and confidence scores. The mean
46 knowledge and skills score for the fifty-two respondents was 47%, the highest score was 73% (two
47 respondents). The percentage of respondents answering individual questions correctly ranged from
48 12% to 90% per question. For 6/15 questions, fewer than 50% of pharmacists gave a correct answer.

49 Conclusions: The confidence, knowledge and skills of the surveyed pharmacists in all areas of
50 pharmaceutical care for inpatients with diabetes, including monitoring and developing a treatment

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strategy, requires improvement. It would be appropriate for other organisations to carry out similar assessments in order to identify training needs and therefore improve the ability of pharmacists to support the care of hospitalised patients with diabetes.

Keywords: Diabetes, Hospital, Pharmacists, assessment, knowledge and skills, confidence, UK.

Funding: None

Competing interests: All authors declare that they have no competing interests

60 **Background**

61

62 The prevalence of diabetes is increasing globally (1). In the United Kingdom (UK), it is estimated that
63 4 million people are living with diabetes (2). Appropriate diabetes care is crucial to reduce the
64 incidence of hypoglycaemia and hyperglycaemia and the consequent microvascular and
65 macrovascular complications.

66

67 The National Institute for Health and Care Excellence (NICE) has produced guidelines and quality
68 standards for diabetes care both in both the primary and secondary care setting (3,4). National audit
69 results continue to highlight several issues with diabetes management (5). Patients who experienced
70 one or more medication errors were more than twice as likely to have had a serious hypoglycaemic
71 episode thereby leading to increased hospital stay, morbidity and mortality (5, 6).

72

73 Appropriate care of inpatients with diabetes hinges strongly on the use of medicines, especially
74 insulin. It is important that hospital pharmacists, who are responsible for ensuring appropriate use of
75 medicines for inpatients, have sufficient confidence and knowledge to support the management of
76 patients with diabetes (3,7).

77 Improving the knowledge, and in particular the application of knowledge, of healthcare

78 professionals is relevant in improving outcomes of patients with diabetes (8,9). In the TOPDOC

79 study (9), 2149 UK doctors surveyed reported a lack of confidence in managing diabetes care. Taylor

80 et al (10) also reported a lack of confidence and consequent prescribing and management errors

81 relating to hospital diabetes care amongst doctors.

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83 It is therefore important to understand if pharmacists have sufficient confidence, knowledge and

84 skills to support the multidisciplinary team in providing patient care, and specifically to ensure

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85 appropriate, safe pharmaceutical care. Adequate training should be put in place where deficiencies
86 in practitioners' knowledge and skills are found. There is little published literature assessing the
87 confidence, knowledge or skills of hospital pharmacists in diabetes management. A study evaluating
88 an interprofessional diabetes educational tool found pre-intervention knowledge scores of 62%.
89 Three pharmacists were included in the group of 31 participants (11). Post-intervention reductions in
90 management errors from 74 to 44% ($P < 0.05$) and improvement in appropriate blood glucose
91 monitoring from 67 to 92% ($P < 0.05$) were also found.

92
93 The aim of this current research was therefore to determine the confidence, knowledge and skills of
94 pharmacists in providing pharmaceutical care to inpatients with diabetes. Pharmaceutical care is
95 defined as the responsible provision of drug therapy for the purpose of achieving definite outcomes
96 that improve a patient's quality of life (12).

97
98 The main objectives of this study were to quantify pharmacists' self-reported confidence regarding
99 the pharmaceutical care of in-patients with diabetes and to assess knowledge and skills in this area
100 by way of a questionnaire. A secondary objective was to compare self-reported confidence with
101 assessed knowledge and skills. As there was no instrument designed to assess the confidence,
102 knowledge and skills of pharmacists in this therapeutic area already available, a questionnaire was
103 initially developed.

104 105 **Methods**

106 Part 1: Questionnaire development and validation

107 The development and validation of the questionnaire followed the methods described in similar
108 studies of doctors' confidence and knowledge (9, 11). Four senior clinical pharmacists with expertise
109 in diabetes care reviewed NICE quality standards, locally approved protocols for variable rate insulin
110 and treatment of diabetic ketoacidosis, the summaries of product characteristics for different

111 insulins, and locally reported clinical incidents and errors. These were used to establish a set of core
112 knowledge and skills competencies for the pharmaceutical care of inpatients with diabetes. The
113 competencies were designed to be the minimum required level for hospital clinical pharmacists
114 according to the expertise of the questionnaire developers. The overarching competencies are
115 shown in Table 1.

116 Table 1. Overarching competencies

Medicines reconciliation of anti-diabetic medications
Patient monitoring parameters
Management of uncontrolled and controlled diabetes mellitus
Hypo- and hyperglycaemia
Complications of diabetes mellitus
Micro- and macrovascular complications of diabetes mellitus

117
118 To translate the competencies into assessment questions, the competencies were used to map out
119 key topics for the knowledge, skills and confidence questions. Case scenarios were developed from
120 the mapped competencies, using postgraduate education resources for pharmacists and national
121 and local guidance. Questions related to the case scenarios were then developed. The complexity of
122 the cases was reviewed to ensure they were in line with commonly-seen inpatient scenarios. Each
123 question was allocated to an overarching aspect of the pharmaceutical care process.

124

125 The questionnaire was assessed for face and content validity by a Consultant Diabetologist and a
126 Specialist diabetes nurse. As the questionnaire was multiple-choice, both correct and alternative
127 incorrect answers for each question were also agreed with the panel.

128
129 The questionnaire was then piloted on two occasions for usability and clarity by a total of two
130 pharmacists and five pre-registration pharmacists. Reading ease was not assessed as testing with
131 pre-registration pharmacists was to ensure that the questionnaire was easy to read and
132 unambiguous.

133

134 Description of questionnaire

135 The full questionnaire can be found online (supplementary file).

136 Demographic information requested were the number years qualified, highest level of post-
137 graduate qualification obtained and confirmation of whether the participant had received any
138 specialist training in the field of diabetes.

139 Confidence to deliver pharmaceutical care is assessed by 11 items, against a scale adapted from the
140 Royal College of Physicians validated confidence rating scale for Senior House Officers appraisal (14).

141 The different levels of confidence and an abbreviated term for each are described. 'Not confident'

142 (score of 0) and 'fairly confident' (score of 1) describe a state of being not or only fairly confident

143 (respectively) to use the described skill/ apply the specific knowledge without referring to a

144 specialist team. The term confident (score of 2) was defined as when the individual was confident to

145 use this skill/ apply this knowledge to make a recommendation and follow through to completion.

146 The term fully confident (score of 3) defined an individual who felt fully confident to use this skill/

147 apply knowledge in assisting other pharmacists to make a recommendation. These terms and the

148 extended definitions are detailed at the beginning of the questionnaire.

149 Scoring of the confidence scale was also dichotomised, with fully confident and confident given a
150 score of 1 while fairly confident and not confident scored 0, allowing for a maximum possible
151 dichotomised confidence score of 11.

152
153 The final section of the questionnaire comprised fifteen questions to test knowledge and application
154 of skills. The confidence questions were asked prior to the knowledge and skills section to ensure
155 that the self-assessment of confidence was not altered by the participant first answering the
156 knowledge and skills questions. The questions are all multiple choice, with four possible answers and
157 only one correct answer. 'Don't know' is also an option for each question. The correct answer scored
158 1 whilst any of the three incorrect answers or "don't know" scored 0.

159

160 Part 2: Measuring the confidence, knowledge and skills of pharmacists

161 Setting

162 A large acute healthcare provider organisation in London, UK. Services are delivered on two main
163 sites. One is a 1000-bed secondary, tertiary and quaternary teaching hospital, with several
164 specialties. The second site is a 500 bedded district general hospital. Both hospitals provide acute
165 medical and surgical services. There are pharmacy departments on both sites. Pharmacists visit all
166 inpatient areas daily, reviewing therapy, counselling patients and assessing prescriptions for legality,
167 safety and clinical appropriateness. They also provide medicines-related information, advice and
168 support to members of the multidisciplinary team caring for patients.

169

170 The study design was a prospective evaluation. The questionnaire was hosted on an online website,
171 Survey Monkey®. All pharmacists employed by the organisation (approximately 100) were included.

172 The questionnaire was forwarded to staff as a link in an email. Participants were informed that their
173 responses were anonymous.

174 Written consent was not obtained from participants. The email stated that completion and
175 submission of the questionnaire implied consent to being included. Pharmacists were encouraged to
176 complete the study through promotional presentations, a seminar and reminder emails. There was
177 also the option to request a paper version. **Staff involved in the development of the questionnaire**
178 **were excluded.**

179
180
181 The period of study was September to October 2013, the period the questionnaire was live for.
182 **Ethics approval was not required for this project in accordance with National Health Service**
183 **Research Authority Guidelines. Study approval was obtained from the local Research and Audit**
184 **Committee.**

185
186 **Analysis**
187 Responses were downloaded into Microsoft Excel 2010 for descriptive analysis. SPSS® (version 22)
188 was used for statistical analyses. Data was assessed for normality using the Kolmogorov-Smirnov
189 test.

190
191 Outcomes: Internal consistency of the knowledge and skills questions was assessed using Kuder-
192 Richardson-20 (KR-20) test. Correlations between number of years qualified, confidence and scores
193 on the knowledge and skills assessment were assessed with Spearman's rho. Mann Whitney U and
194 Kruskal-Wallis tests were used to assess statistically significant differences between the means of
195 groups.

196

197 For the self-assessment of confidence, only the responses of participants who answered all the
198 questions in the section were analysed. Respondents were divided into five groups according to the
199 number of years they had been qualified (0 to 1; 2 to 3; 4 to 6; 7 to 10 and greater than 10 years).
200 The mean confidence score for each group was calculated.

201
202 Respondents were also placed into one of two groups based on their total confidence scores (5 and
203 below; 6 and above).

204 For responses to the knowledge and skills questions to be eligible for analysis, participants had to
205 have answered the questions in both the confidence and knowledge and skills sections.

207 Results

208 Part 1: Content validation by this expert panel led to the addition of one question regarding
209 selection of an appropriate treatment regimen. After piloting with pre-registration pharmacists,
210 minor rewording changes were made to two questions, to improve clarity.

211 Part 2: Seventy-eight pharmacists out of a possible 100 submitted responses. All seventy-eight
212 respondents completed two of the three demographic questions. Five did not answer the question
213 relating to highest level of postgraduate training.

214 Seventy-two respondents completed all of the confidence questions (72% response rate for
215 confidence section) and fifty-two completed all of the confidence questions and the knowledge and
216 skills questions (52% response rate for both sections).

218 Demographics

219

220 The respondents' number of years qualified and postgraduate training are displayed in table
 221 2. Responses to the question relating to whether the participant had received any specialist
 222 diabetes training are not shown. This question was answered by all participants, however it allowed
 223 for free-text with no definition of specialist training provided. Therefore the responses were not
 224 suitable for analysis, thematic or otherwise.

225 Table 2. Respondent demographics

	All respondents (n=78) [%]	Respondents who completed knowledge and skills questions (n = 52) [%]
Years qualified		
0-1 years	14 [18%]	8 [15%]
2-3 years	14 [18%]	10 [19%]
4-6 years	15 [19%]	10 [19%]
7-10 years	20 [26%]	13 [25%]
>10 years	15 [19%]	11 [21%]
Postgraduate qualifications		
None	9 [12%]	5 [10%]
Postgraduate certificate in clinical pharmacy or pharmacy practice*	14 [19%]	10 [19%]
Postgraduate diploma in clinical pharmacy or pharmacy practice**	40 [55%]	27 [52%]

Postgraduate Masters' degree	8 [11%]	5 [10%]
PhD	1 [1%]	1 [2%]
Other	1 [1]	0 [0]
No answer	-	4 [8%]

226 *Postgraduate certificate is UK qualification Level 7, 60 credits, usually awarded after 12 – 18
 227 months part-time study

228 **Postgraduate diploma is UK qualification Level 7, 120 credits, usually awarded after 2-3 years
 229 part-time study

231 Self-assessment of confidence

232 Seventy-two participants answered all 11 confidence questions. The results are displayed in table 3.

234 **INSERT TABLE 3 HERE**

236 The most common response was 'fairly confident' which received 48% of the total responses. 'Fully
 237 confident' received only 4% of the total responses.

238 Table 4 shows confidence by years qualified.

239 Table 4. Confidence self-rating by years qualified (n=72)

Years qualified	Respondents in year band	Mean confidence score per respondent (sd)
0-1	11	8.3 (3.0)
2-3	13	11.7 (7.7)
4-6	15	13.2 (6.2)
7-10	18	10.3 (6.0)

>10	15	11.1 (6.6)
-----	----	------------

240 The maximum possible score per participant was 33 (i.e. fully confident in all areas).

241

242 There was no correlation between years qualified and confidence scores (Spearman's rho, $r = 0.047$,
 243 $p = 0.692$).

244

245 A Kruskal-Wallis test revealed that there was no statistical difference in mean confidence scores
 246 across the five different year bands (Chi-Square = 4, $p = 0.4$).

247

248 After dichotomisation, the mean confidence score was 2.7/11 (range = 0-11, sd = 3.4), and the
 249 median was 1 (IQR = 4). Four participants scored themselves 11/11, whilst 27 participants (38% of
 250 total respondents) scored 0/11.

251

252 Knowledge and skills

253 Twenty six participants did not answer any of the knowledge and skills questions therefore fifty two
 254 participants' responses were analysed. All fifty two respondents answered every question. Table 5
 255 shows the number of correct responses to each question.

256 Table 5. Results for the knowledge and skills questions (n=52)

Aspect of care	Topic	No. of correct responses (% of participants)
Monitoring	Blood glucose	14 (27%)
Monitoring	Glycaemic control	42 (81%)

Monitoring	Glycaemic control	17 (33%)
Monitoring	Glycaemic control	31 (60%)
Monitoring	Need for dose adjustment	47 (90%)
Knowledge	Oral agent pharmacology	31 (60%)
Knowledge	Insulin pharmacology	31 (60%)
Treatment strategy	Insulin dose adjustment	28 (54%)
Treatment strategy	Insulin dose adjustment	27 (52%)
Treatment strategy	Selection of appropriate treatment strategy	6 (12%)
Treatment strategy	Diabetic ketoacidosis	26 (50%)
Treatment strategy	Diabetic ketoacidosis	11 (21%)
Treatment strategy	Insulin variable rate infusion management	10 (19%)
Treatment strategy	Insulin variable rate infusion management	12 (23%)
Treatment strategy	Insulin variable rate infusion management	35 (67%)

257 The result of the KR-20 test was 0.43.

258

259 The mean knowledge and skills score was 47%, (7/15, range = 3 -11, sd = 2.2). Twenty-five
 260 participants scored greater than 50%. There was no correlation between years qualified and
 261 knowledge and skills score (Spearman's rho, $r = -0.029$, $p = 0.839$).

262

263 Correct responses varied from 12% to 90% per question, with selection of appropriate treatment
 264 strategy having the fewest correct answers. This required participants to choose the type of insulin
 265 regimen best suited to provide optimal blood sugar control in a young university student with Type 1
 266 diabetes. Identifying the requirement for adjusting the dose of insulin during an acute infective
 267 episode, interpreting the pattern of glycaemic control from a given set of blood glucose results and

268 advising how to discontinue a variable rate insulin infusion were the questions which received the
269 most correct responses.

270
271 The different topics that each question was allocated to are shown in the questionnaire
272 supplementary file. A Kruskal-Wallis test did not reveal a significant difference in test scores across
273 the nine different topics ($H = 2.447$, $p = 0.654$). Therefore, no one topic was answered significantly
274 better than another. There were also **no statistically significant differences** between the results for
275 the three aspects of care - knowledge, monitoring and treatment strategy (Kruskal-Wallis $H = 3.944$,
276 $p=0.139$).

277
278 Forty-three (83%) respondents had a total dichotomised confidence score of less than 6 (not
279 confident) while 9 (17%) participants scored 6 or more dichotomised confidence points (confident).
280 The mean knowledge and skills score for both of these groups was compared. There was a
281 significant difference between the two groups ($U = 86.5$, $p= 0.009$), with the participants with higher
282 self-assessed confidence scoring higher in the knowledge and skills assessment (median knowledge
283 and skills score for confident respondents = 9, not confident = 7).

284

285 **Discussion**

286 This is the first study to focus on the confidence, knowledge and skills of hospital pharmacists within
287 the field of **inpatient diabetic** care. We found low confidence and varied application of knowledge
288 and skills in managing key aspects of care for inpatients with diabetes. Diabetes is a
289 condition requiring complex, multi-faceted pharmaceutical care and management (12,15), so it is
290 surprising that there are no previous studies to directly compare with.

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292 The pharmacists surveyed in this study covered a wide spread of years of experience, and there was
293 no difference between the average confidence scores for the different groups of pharmacists,
294 regardless of number of years qualified. However, the study was underpowered to detect anything
295 other than a large difference in average scores. The pharmacists with 4 to 6 years of experience had
296 the highest mean confidence score. In this organisation, this group of pharmacists spend a greater
297 proportion of their time providing direct clinical care, compared to more junior or senior staff.

298
299 Participants who rated themselves more confident performed better in the knowledge and skills
300 questions, although overall performance on the questions was poor. No one answered all questions
301 correctly, with the highest score being 11/15 (73% - two participants) and 52% of the participants
302 achieving a score of less than 50%. It is appropriate to consider a minimum passing score to be 50%,
303 in accordance with the regulations for the Postgraduate Diploma in Pharmacy Practice which all
304 pharmacists in this organization are expected to achieve within their first few years of registration
305 (18). Thus, the majority of pharmacists failed the assessment. The questions relating to
306 pharmacology achieved higher mean scores than the other topics. This might be expected for this
307 profession. The difference in scores across the different topics was not found to be statistically
308 significant, although a lack of power contributed to this finding. Combining the topics into the
309 broader aspects of pharmaceutical care also showed no statistical difference in scores between
310 aspects of care. The knowledge and skills of the surveyed pharmacists in all areas of pharmaceutical
311 care for inpatients with diabetes, including monitoring and developing a treatment strategy, appears
312 to need improvement. It would be appropriate for other organisations to carry out similar
313 assessments in order to identify training needs, which if addressed, could improve the quality of care
314 for this group of vulnerable, high-risk patients. It is not possible to postulate definite reasons for the
315 low level of confidence, knowledge and skills found in the study but reasons from the TOPDOC study
316 (9) included the fact that participants felt that their undergraduate training had not prepared them
317 for managing some specific aspects of diabetes and all welcomed further training in this area. It is

1
2 318 likely that some of the same reasons apply. In this institution, regular diabetes training sessions are
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4 319 not held, therefore no guidance is given to pharmacists on the level or types of competencies that
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6 320 are expected in order to support the management of this group of patients.
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10 322 The results of the study present several implications for hospital clinical pharmacy practice. It is
11
12 323 possible that pharmacists are currently ill-equipped to provide an adequate level of pharmaceutical
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14 324 care to this group of patients. Junior doctors may therefore not be receiving appropriate advice or
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16 325 guidance from pharmacists. Possible consequences for patient care include medication errors,
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18 326 longer lengths of stay and greater risk of medium and long term complications.
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23 328 Apart from the selection of an initial insulin regimen, the two questions where the respondents'
24
25 329 performance was low were management of diabetic ketoacidosis and adjusting variable rate insulin
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27 330 infusions. Management of diabetic ketoacidosis, in particular, involves complex fluid and electrolyte
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29 331 management which is frequently found to be a weakness of pharmacists. NICE, in Quality Standard
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31 332 QS56, comments that there is a lack of expertise in the management of intravenous fluids and
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33 333 electrolytes (16). This lack of knowledge can be seen in the poor performance by pharmacists on
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35 334 these questions, and has implications for the appropriate treatment of patients with this diabetic
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37 335 ketoacidosis, who are more susceptible to harm because of their acute condition.
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44 337 The results demonstrate the need for pharmacists to ensure that they identify and address their
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46 338 training needs with regards to caring for patients with diabetes.
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53 340 There are some limitations to this study. Not all participants answered the knowledge and skills
54
55 341 questions, although all confidence questions were answered. One reason for this could be that after
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57 342 answering the confidence questions, some participants were reluctant to test themselves and
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59 343 confirm their lack of knowledge. Additionally, the knowledge and skills questions were not made
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344 mandatory. The included topics and questions were developed from the ground up, in the absence
345 of validated standards or competencies. They are thus subject to the assumptions of the
346 questionnaire developers. However, the team included pharmacists experienced in diabetes care
347 and educational theory, as well as an expert specialist nurse and Consultant
348 Diabetologist. Therefore we are confident that appropriate areas of care were included and that the
349 questionnaire had sufficient face and content validity. Different researchers may categorise
350 questions under alternative topics and aspects of care, however this would not alter the overall
351 findings. The Kuder-Richardson 20 test was applied to test the homogeneity of the knowledge and
352 skills questions. It is equivalent to Cronbach's Alpha for binary values (correct/not correct,
353 yes/no). A KR-20 value is between 0 and 1.0 with higher values indicating a greater level of
354 homogeneity. KR-20 is influenced by the difficulty of each item and the spread of the scores (17),
355 therefore the relatively low value of 0.43 could indicate a lack of internal consistency or reliability.
356 However, the variability in difficulty of the scenarios represents real-life levels of complexity of
357 patients with diabetes in an inpatient environment. Therefore, the low KR-20 score is not a
358 limitation of the questionnaire.

359

360 Conclusion

361 This study of a cohort of pharmacists within a large teaching hospital Trust in the UK indicates that
362 confidence, knowledge and skills in the therapeutic management of inpatients with diabetes are
363 low. The majority of participants were not able to demonstrate an ability to provide an acceptable
364 level of pharmaceutical care to patients with diabetes. Training for hospital pharmacists in diabetes
365 needs to focus on addressing aspects of knowledge such as selection of appropriate therapy and
366 managing variable rate insulin infusions. This should improve their ability to support the care of
367 patients with diabetes. The questionnaire should undergo further validation in order for it to be
368 more generally applicable.

369

370 Acknowledgements

371 The authors would like to thank Natasha Callender and Roula Razouk for their help in developing the
372 questions, Dr. Rif Malik and Alison Cox for reviewing and commenting on the questions, and Dr.
373 Vivian Auyeung for her helpful comments on a draft version of the manuscript.

374 Table 3: Results of confidence self-assessment (n=72)

How confident are you...	Not confident	Fairly confident	Confident	Fully confident
To interpret trends in blood glucose?	8 (11%)	40 (56%)	20 (28%)	4 (6%)
In your knowledge of pharmacology and pharmacokinetics of oral medicines?	22 (31%)	34 (47%)	13 (18%)	3 (4%)
In your ability to recommend adjustments to a diabetic regimen for a patient?	34 (47%)	29 (40%)	8 (11%)	1 (1%)
In your ability to identify oral hypoglycaemic medicine drug-disease interactions?	12 (17%)	40 (56%)	19 (26%)	1 (1%)
In your ability to manage the diabetic regimen of a patient taking into consideration oral anti-diabetic drug-disease interactions?	27 (38%)	35 (49%)	10 (14%)	0 (0%)

How confident are you...	Not confident	Fairly confident	Confident	Fully confident
In your understanding of the pathophysiology of micro- and macrovascular complications associated with disease?	14 (19%)	36 (50%)	17 (24%)	5 (7%)
In your ability to manage or advise on the management of an episode of hypoglycaemia?	13 (18%)	36 (50%)	17 (24%)	6 (8%)
In your ability to manage or advise on the management of an episode of hyperglycaemia?	16 (22%)	36 (50%)	17 (24%)	3 (4%)
In your ability to advise on adjusting an appropriate insulin variable rate (sliding scale) regimen?	33 (46%)	25 (35%)	12 (17%)	2 (3%)
In your ability to advise on initiating an appropriate insulin variable rate (sliding scale) regimen?	35 (49%)	30 (42%)	4 (6%)	3 (4%)
Total responses (n = 792)	222 (28%)	378 (48%)	161 (20%)	31 (4%)

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52 421 **Declarations**

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55 422 **List of Abbreviations**

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58 423 UK – United Kingdom
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3 424 NICE - National Institute for Health and Care Excellence

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6 425 NaDIA - Diabetes Inpatient Audit

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10 **427 Ethics**

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13 428 Ethics approval was not required for this study.

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19 **430 Consent to participate**

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22 431 Consent to participate was implied by submission of the questionnaire.

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28 **433 Competing interests**

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31 434 All authors declare that they have no competing interests.

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37 **436 Authors' contributions**

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40 437 CB participated in the study concept and design, led on developing the questionnaire and jointly

41
42 438 performed the statistical analysis and drafted and revised the manuscript. RO conceived of the

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44 439 study design, participated in designing the questionnaire, and jointly performed the statistical

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46 440 analysis and drafted and revised the manuscript. RO and CB are joint first authors. PY participated in

47
48 441 designing the questionnaire, co-ordination of data collection and critically reviewed the manuscript

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50 442 for important intellectual content. RS participated in designing the questionnaire, drafting the

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52 443 manuscript and critically reviewed the manuscript for important intellectual content. RO was overall

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54 444 study supervisor. All authors read and approved the final manuscript.

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446 **Availability of data and materials**

447 The data supporting these findings (i.e. the dataset with full questionnaire results) are not available.

448 This is because the authors are undertaking further studies, using the results of the current study.

449 The authors are therefore unable to make the full results publically available at this time.

PW24

Pharmacist independent prescribing in secondary care:
opportunities and challenges

Richard S. Bourne, Wasim Baqir, Raliat Onatade

Pharmacist independent prescribing in secondary care: opportunities and challenges

Richard S. Bourne¹ · Wasim Baqir² · Raliat Onatade³

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Abstract In recent years a number of countries have extended prescribing rights to pharmacists in a variety of formats. The latter includes independent prescribing, which is a developing area of practice for pharmacists in secondary care. Potential opportunities presented by wide scale implementation of pharmacist prescribing in secondary care include improved prescribing safety, more efficient pharmacist medication reviews, increased scope of practice with greater pharmacist integration into acute patient care pathways and enhanced professional or job satisfaction. However, notable challenges remain and these need to be acknowledged and addressed if a pharmacist prescribing is to develop sufficiently within developing healthcare systems. These barriers can be broadly categorised as lack of support (financial and time resources), medical staff acceptance and the pharmacy profession itself (adoption, implementation strategy, research resources, second pharmacist clinical check). Larger multicentre studies that investigate the contribution of hospital-based pharmacist prescribers to medicines optimisation and patient-related outcomes are still needed. Furthermore, a strategic approach from the pharmacy profession and leadership is required to ensure that pharmacist prescribers

are fully integrated into future healthcare service and workforce strategies.

Keywords Secondary care · Independent prescribing · Medicines optimisation · Professional practice · United Kingdom

Impacts on practice

- Independent prescribing by pharmacists in secondary care offers the opportunity to improve medication optimisation and outcomes in acute care patients.
- Challenges to pharmacist prescribing uptake do exist, but generally these are surmountable and within the influence of the profession.
- For wide-scale adoption of pharmacist prescribers, strategic support for training, research and integration into workforce planning is also needed at national levels.

Introduction

In recent years a number of countries have extended prescribing rights to pharmacists, utilising a variety of formats. Pharmacists in the United States, Canada, Australia and New Zealand are able to undertake forms of prescribing ranging from collaborative prescribing with doctors, to prescribing from a limited formulary [1]. In the United Kingdom (UK), changes to medicines legislation in 2003 initially allowed pharmacists to practice as supplementary prescribers using a condition-specific treatment plan agreed with the independent prescriber (doctor) and patient. This model of prescribing is similar to the

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American or Canadian models of collaborative management of medication therapy. However, this clearly does not suit the needs of the majority of acutely ill patients, often with multiple co-morbidities, who usually require secondary (hospital) care. Prescribing rights for UK pharmacists were extended in 2006, allowing qualified pharmacists to independently prescribe medication (unlicensed medicines and controlled drugs were added in 2009 and 2012 respectively) for any condition they deemed within their own competency, following some additional training [2]. Some Canadian provinces, a minority of American states and Federal Veteran Affairs institutions also allow pharmacists to independently prescribe [3]. More recently this facility was also extended to New Zealand pharmacists. In the UK, the majority of pharmacist prescribers work in the acute hospital setting [4, 5]. However, in Canada, published research appears to indicate that community pharmacists have embraced this role more than their hospital colleagues [6–9].

With ever increasing pressure on healthcare resources it is necessary to ensure that efficient staffing models are incorporated into hospital workforce planning [10, 11]. Potential opportunities presented by wide scale implementation of pharmacist prescribing in secondary care include improved prescribing safety, more efficient pharmacist medication reviews, increased scope of practice with greater pharmacist integration into acute patient care pathways and enhanced professional or job satisfaction. Secondary care provides an ideal environment for pharmacists to prescribe independently; ready access to detailed patient care records and laboratory results facilitate safe prescribing. Close working within the multidisciplinary team in this setting further supports pharmacist prescribing, as the diagnostic skills of other healthcare colleagues are readily available [12]. However, notable challenges remain and these need to be acknowledged and addressed if pharmacists are to capitalise on forthcoming healthcare changes [10].

Opportunities

Medicines are the most common intervention patients receive in hospital and therefore ensuring their optimisation and safe use is an extremely important aspect of patient care [13]. Studies in the UK examining prescribing error rates of hospital doctors report figures in the region of 8 % [14, 15]. The causes of these prescribing errors are multifactorial and include: individual factors (e.g. lack of knowledge and experience), working environment (e.g. frequent interruptions and low staffing levels) and team issues (e.g. poor communication and inadequate supervision). Latent conditions (i.e. hidden contributing factors not directly visible in the working environment) which have

been described in the UK include inadequate training in prescribing skills, low perceptions of the importance of prescribing and limited self-awareness of errors (sometimes due to lack of feedback) [14, 16–18]. Consequently, guidance for all prescribers have been developed in a number of countries, including the UK [13]. Pharmacist prescribing studies to date report relatively low error rates. Baqir et al. [19] investigated the nature and extent of prescribing and prevalence of errors by pharmacist independent prescribers in three general hospitals (one organisation) in the North-East of England. They reported a prescribing error rate of 0.3 % in 1415 prescribed items which compares favourably with the error rates reported in the EQUIP and PROTECT studies (8.3 and 7.5 % respectively) investigating primarily medical prescribing in the UK [14, 15]. Onatade et al. [20] reported errors in 2.8 % of 428 discharge medication lists written by pharmacists in one UK hospital. In comparison, Seden et al. [21] identified errors in 34.5 % of 2467 discharge prescriptions written by hospital doctors in a study conducted in nine hospitals across North-West England.

Pharmacists have an established role in the routine optimisation of medicines in hospitalised patients, utilising comprehensive medication reviews to improve the safe and effective use of medicines to enhance patient outcomes [14, 15]. A recent international systematic review of medication reviews carried out by pharmacists in secondary care reported this activity improved the quality of prescribing and was associated with positive outcomes (e.g. healthcare savings, reduced patient readmission rates) [22]. The strong focus of the pharmacist undergraduate training on aspects of therapeutic use of medicines, proven ability to improve the quality of prescribing in practice and now complemented by the independent prescribing qualification provide a solid foundation for the safety of independent pharmacist prescribing. Pharmacist initiation, modification and discontinuation of medication treatment plans via independent prescribing is a logical step in the progression of pharmacist medication reviews of hospital patients. Initial data relating to secondary care pharmacist prescribing seem to support the hypothesis that prescribing capabilities do build on the benefits of medication reviews. Hospital pharmacist prescribing in Australia [23] and United States [24] on admission and at pre-admission has demonstrated improved prescribing compared to medical staff prescribing (fewer errors, missed doses and adverse drug events).

The ability to independently prescribe therefore presents an obvious opportunity for professional development. Such professional development is necessary if pharmacists are going to be equipped to fully meet the needs of future healthcare workforce strategies e.g. emergency care and full 7 days per week services [10]. Pharmacists appear cognisant of this and the most frequently reported reasons

for taking on prescribing roles by pharmacists is for improved patient care and professional development [25]. National Health Service (NHS) Scotland in their national pharmacy strategy eloquently captures what is possible when pharmacy accepts and undertakes prescribing at a health-system level. Scotland's vision, 'A Prescription for Excellence' is very clear that excellent clinical care can be delivered through pharmacist prescribers, therefore it has a stated aim to have all NHS pharmacists being able to prescribe by 2023 [11]. The scope of pharmacist prescribing in hospitals is developing. In 2010, a national evaluation of pharmacist and nurse independent prescribing in the UK identified that while hospital pharmacist prescribing was not particularly common at that time, where it did take place, pharmacists were predominantly prescribing for cardiovascular and other long-term conditions e.g. diabetes [26]. Hospital pharmacists are now prescribing in a diverse number of inpatient therapeutic areas, including antimicrobials, analgesia, anticoagulation, cardiovascular, respiratory, diabetes, gastroenterology, neurology, parenteral nutrition and renal medicine, as well as using their prescribing skills in more generalist roles, for instance, on admissions and surgical wards [4, 5]. As this prescribing scope develops it is creating opportunities within emergency care where pharmacists historically have had limited practice. For example, hospital Emergency Departments (EDs) present a relatively untouched area of clinical pharmacy practice even though between 5 and 8 % of hospital admissions are medication-related [13]. In the UK, a West Midlands study is ongoing to investigate the potential for an enhanced clinical role including prescribing for pharmacists working within the wider team in EDs. Preliminary reports indicate a positive impact on patient safety and patient care efficiencies leading to increased acute care capacity [27]. In Australia, early experience also suggests that pharmacist prescribing activity may be beneficial in EDs [28].

Challenges

The uptake of independent prescribing by hospital pharmacists is still relatively low, although there is inter- and intra-national variability [4, 5, 29]. Recent workforce figures indicate approximately 5 and 10 % of all registered pharmacists in the UK and Canada (Alberta) respectively are qualified independent prescribers [29, 30]. Roughly 75–85 % of Alberta and UK qualified pharmacist prescribers respectively, are routinely practising as such [4, 29]. This limited uptake of prescribing by pharmacists has significant implications for service continuity and development, as for any workforce model to be realised it needs to be able to be consistently applied and at sufficient scale

[10]. Similar to most healthcare initiatives, the introduction and development of non-medical prescribing comes with a variety of challenges. The potential barriers preventing pharmacists from practising as prescribers need to be identified if they are to be addressed and appropriate wide-scale implementation enabled. These barriers can be broadly categorised as lack of support (financial and time resources), medical staff acceptance and the pharmacy profession itself (adoption, implementation strategy, research resources, second pharmacist clinical check) [5].

Initially, medical colleagues had reservations about pharmacists taking on independent prescribing roles, mainly because of concerns about clinical roles and responsibilities of the professions and pharmacists' limited diagnostic skills [31]. However, over time these issues have largely been overcome and pharmacist prescribers have integrated into healthcare teams. Positive experiences with pharmacist prescribers and shortages in junior medical staff availability have also led to a greater willingness for medical leaders to embrace the concept of a more diverse healthcare workforce taking active care of patients including prescribing medication. It may be that a greater understanding of the importance and fundamentals of medicines optimisation (patient-focused approach to get the most out of medication therapy in terms of patient and health economic outcomes) has facilitated inter-professional working in this area. Medicines optimisation is not limited to preventing and resolving medication errors and a multidisciplinary approach is required to be fully effective [32]. In order to provide optimum patient care as prescribers, pharmacists should also have enhanced clinical skills and must acknowledge scenarios in which they may have more limited assessment and diagnostic skills [25]. Such awareness is likely to harmonise multidisciplinary team working and prescribing interventions related to medication reviews.

Perhaps a greater challenge to pharmacist prescribing is the pharmacy profession itself. Rosenthal et al. [33] describe in detail why the pharmacy profession struggles sometimes with changes in practice. In a Canadian study, they argue that the personality traits related to patient care (e.g. lack of clinical confidence, fear of new responsibility) of some pharmacists don't lend themselves to taking on active decision making in the care of patients and seek to gain others approval for their suggestions. Common risk factors for prescribing errors such as excessive workload, lack of communication, tiredness and patient complexity, remain significant for all prescribers, including pharmacists. The potential for increased clinical risks may not suit all pharmacist practitioners and some may find intra-professional conflicts may arise between prescribing and non-prescribing pharmacist roles [31]. However, these concerns may not be that significant, for example 70 % of all UK

pharmacists working in adult critical care areas predict to be practising prescribers within the next 3 years [34].

Further work by Rosenthal et al. [29], specifically examining the culture and personality traits of early pharmacist adopters of prescribing activity in Alberta, Canada reported that prescribers perceived value in the culture factors of competitiveness, social responsibility, supportiveness, performance orientation, and stability with high openness and extraversion traits. It may be that pharmacists with a tendency towards these cultures and traits may be more likely to become prescribers and perhaps such awareness could inform systematic and theory-driven approaches to increase pharmacist prescribing uptake.

The scope or remit of pharmacist prescribing is also highly variable which makes routine incorporation into patient care pathways more difficult. It is possible for a pharmacist to have an independent prescribing qualification, but lack the specialist knowledge and confidence to apply to patient care. This may partly explain why not all qualified pharmacist prescribers routinely practice as such [4, 29]. Whilst the independent prescribing qualification is designed to meet the legal requirements for pharmacist prescribing and provide basic clinical assessment skills, it cannot also cover the wide spectrum of clinical knowledge and experience required to prescribe confidently. In the UK the Modernising Pharmacy Careers programme board [35] set up in 2011 to review and propose reforms to pharmacist undergraduate education and pre-registration training, came to a similar conclusion. The board recognised the need to change aspects of pharmacist undergraduate training to better prepare them for a patient-focused clinical role, and did not recommend pharmacist independent prescribing at the point of registration. It may be that the development of more structured post-graduate clinical training incorporating aspects of consultation, communication and prescribing skills will improve delivery of pharmacist prescribing. In secondary care it is too simplistic to expect all qualified pharmacist prescribers to have the same scope of practice in all areas. This may also explain why the indication for the majority of medicines prescribed by hospital pharmacists in one study, appeared related to medicines reconciliation (68 %) [19] i.e. a generalist service. In the UK, some hospitals have approached this by having clinical areas in which all qualified pharmacist prescribers can prescribe (*generalists*—providing pharmaceutical care across a wide range of medicines or disease states) and areas in which pharmacist must be *specialists* (providing a more advanced level of pharmaceutical care within a specific clinical speciality they have received further qualification or training in) to prescribe. This appears prudent and perhaps pharmacists need to be working at an advanced/

specialist level in the clinical specialty prior to taking on full prescribing responsibilities.

To date, the majority of the evidence base supporting the safety and efficacy of pharmacist prescribing is in community practice for chronic conditions. Canadian researchers have reported relatively large and well designed interventional studies in the community setting that have clearly demonstrated that pharmacist prescribers provide cost-effective management of hypertension [7, 9], glycaemic control [6], and secondary prevention in stroke patients [8]. In contrast, there are surprisingly few studies investigating the safety and efficacy of pharmacist prescribing in secondary care and those that have been conducted have significant limitations. Indeed the majority of studies examining hospital pharmacist prescribing are small, single-centre observational studies and frequently only available as preliminary reports, or they examine professional opinions and activities rather than outcomes [5]. There may be some relevant explanations for these apparent evidence deficiencies, such as the lack of a clear strategy for independent prescribing in this sector, poor communication of roles and lack of sustainability [36]. These problems are likely compounded by lack of a co-ordinated research strategy as well as limited research resources, including academic support. Methodological difficulties inherent in studying and attributing clinical endpoints in acute versus chronic patient care are possibly additional hurdles. These current evidence base limitations have significant implications for policy makers when examining deliverable solutions to patient care pathways.

A key role of clinical pharmacists is to ensure the safe use of medicines, by providing a ‘first or second check on prescribing’. Whilst prescribing error rates reported for general hospital pharmacist prescribers appear relatively low, the requirement for a clinical check of pharmacist prescriptions does create some challenges. For example, a pharmacist prescription may be delayed or indeed prevented by lack of a clinical check and therefore require another health professional to undertake the prescribing, irrespective of who is most competent to prescribe the treatment. This has led some hospitals to remove the need for pharmacist prescriptions to require a clinical check before supply. Clearly this is a key area for discussion within the pharmacy profession to ensure we do not inadvertently increase patient risk either by reducing safety controls or by hampering pharmacist prescribing and related practice developments.

Finally, for pharmacist prescribers to be integrated into the core clinical pathways for patient care [37] and be included in workforce developments, [10] systematic support and policy agreement is required to achieve the scope, speed and scale required [36].

Conclusions

Early experience and research evidence does suggest that hospital pharmacist prescribers have an important role as members of the wider healthcare team in improving medicines optimisation and care for patients. However, larger multicentre studies that investigate the contribution of hospital-based pharmacist prescribers to medicines optimisation and patient-related outcomes are needed. The pharmacist workforce needs to embrace the associated patient clinical responsibility prescribing requires, in tandem with a co-ordinated strategic approach from the pharmacy profession and leadership. Only then can we ensure that pharmacist prescribers are fully integrated into future healthcare service and workforce strategies.

Funding None.

Conflicts of interest None.

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PW25

The extent of, and documented reasons for,
discrepancies in post-hospital medicines reconciliation

Knight E., Scaria A., Lama S., Stevenson J., Onatade R.

Methods

A retrospective audit was conducted across three large cardiac centres within the West Midlands. A total of 147 patients were included. This audit did not require ethics approval.

Trusts local cardiac specific databases and electronic discharge summaries were used to identify patients who had experienced an ACS within the last 12 months. Medications on discharge were noted and GP records were utilised to determine whether dose optimisation of ACE inhibitors or beta-blockers took place in the 12 months following discharge. The audit included patients who received percutaneous coronary intervention as well as those patients in whom medical management was the chosen treatment strategy.

Results

Our data demonstrates that across the three centers, only 72% (106/147) of patients were discharged on a full complement of secondary prevention medications (aspirin 99%, P2Y₁₂ inhibitors 95%, statins 96%, ACEI/ARB 80% and beta-blocker/rate limiting CCB 83%). In addition, dose optimisation of beta-blocker and ACE inhibitors post discharge remains poor; with the doses of ACEI and beta-blockers remaining unchanged in 63% and 75% of patients respectively. In those patients in whom dose modifications were made, the majority were undertaken within a hospital setting at the routine 6 week follow up appointment.

Conclusions

Beta-blockers and ACE inhibitors are known to improve survival following a heart attack; the greater the dose prescribed the greater the benefit derived. Despite proven mortality benefits and a robust evidence base, substantial gaps still exist between guideline recommendations for the management of ACS and their implementation into current clinical practice.

Through utilising all sectors of the pharmacy workforce; hospital, community and CCG based, we have the potential to address a large and clearly unmet clinical need and can ensure that this high-risk patient group is appropriately managed to improve their overall health and well-being and reduce the number of hospital re-admissions secondary to sub-optimal pharmacological management.

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17. The extent of, and documented reasons for, discrepancies in post-hospital medicines reconciliation

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Background

When patients move between care settings a lack of clear communication can lead to unintended changes in medications which can negatively impact on patient safety.

An initiative at this Trust provides GPs with more detailed information about medicine changes made during admission in older patients. A clinical medication review letter (CMR) is provided after discharge with sections for medications stopped, to continue, new and changed, and the reasons.

Objectives

- Assess the extent of, and documented reasons for, discrepancies between CMRs and GP medication lists after discharge
- Determine the length of time between receipt of CMRs and post-hospital medicines reconciliation

Methods

This study was comprised of two phases, with patients from the same wards.

Phase one: Between October 2014 and December 2014, GP surgeries were asked for a faxed copy of each patient's current medication list three weeks post-discharge, which was compared to their CMR.

Phase two: Visits to 13 surgeries were arranged between December 2014 and April 2015. The records of patients discharged since December 2014 but at least 2 weeks before the scheduled visit were reviewed. Medication lists were compared with the CMR. Additional information and dates of reconciliation were noted.

This study did not require ethics approval.

Results

Phase one included 105 patients. Three weeks after discharge, 30% (32/105) GP medication lists fully matched the CMR i.e. all changes had been made. In 60% (63/105) some changes were made. No changes were made for 10% (10/105) of GP lists. 626 changes were recommended in total. 75% (468/626) (95% CI 72.7 – 78.4%) of these changes were actioned three weeks post-discharge. The median number of drugs on discharge was 10 (IQR, 7–13).

Phase two followed up 109 patients. 41% (45/109) medication lists completely matched the CMR. There was no difference in this proportion compared to phase one (Chi-Square, p=0.09).

704 recommendations were made in phase two. 83% (584/704) (95% CI 80.3 – 85.7%) were actioned. 5% (35/704) were unactioned with documented reasons. Therefore a definite decision was made for 88% (619/704) of recommendations. The reasons for non-implementation of the remaining 12% (85/704) of recommendations were not documented.

The median time between CMR receipt and reconciliation was 2.5 days (IQR, 0-4). When active changes were made, 82% (397/481) were implemented within 1 week, and 91% (439/481) within 2 weeks of discharge.

Combining results of both phases, 36% (77/214) (95% CI 29.5 – 42.5%) of hospital and GP medication lists matched completely when reviewed soon after discharge.

Conclusions

Phase one showed that when assessing post-hospital reconciliation purely from a hospital perspective, 75% of changes were actioned. However when GP systems were interrogated in phase two, it was seen that 88% of recommendations were reviewed.

Despite the provision of more detailed, structured information, there was no documentation regarding the majority of unactioned changes after discharge, which has clear patient safety implications. Our findings also demonstrate that only a minority of hospital discharge medication lists and GP medication lists will match at any one time. Limitations: 8/21 surgeries did not participate in phase two. It was not possible to ask GPs their reasons for not implementing recommendations.

The extent of, and documented reasons for, discrepancies in post-hospital medicines reconciliation

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Introduction

- Moving between care settings can lead to unintended changes in medications, if discharge communication is not clear and complete.
- An initiative at Kings College Hospital aims to provide GPs and patients with more structured, detailed information about the medicine changes made during admission for our older patients.
- A clinical medication review letter (CMR) is provided to patients and GPs after discharge with clear sections for medications stopped, to continue, new and changed, reasons for the changes and suggested follow-up for GPs.
- The aim is that this documentation will improve post-hospital medicines reconciliation for these higher risk, polypharmacy patients.

Objectives

1. Assess the extent of, and documented reasons for, discrepancies between CMRs and GP medication lists after discharge.
2. Determine the length of time between receipt of CMRs and post-hospital medicines reconciliation.

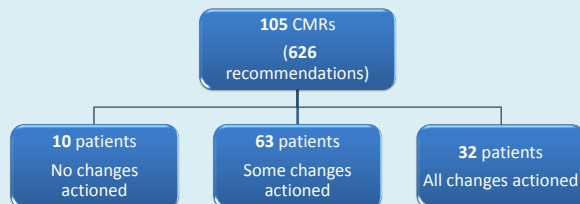
Method

This study was comprised of two phases, with patients from the same elderly care wards. This study did not require ethics approval.

Phase one: Between October 2014 and December 2014, GP surgeries were asked for a faxed copy of each patient's current medication list three weeks post-discharge. This was then compared to their CMR and discrepancies noted.

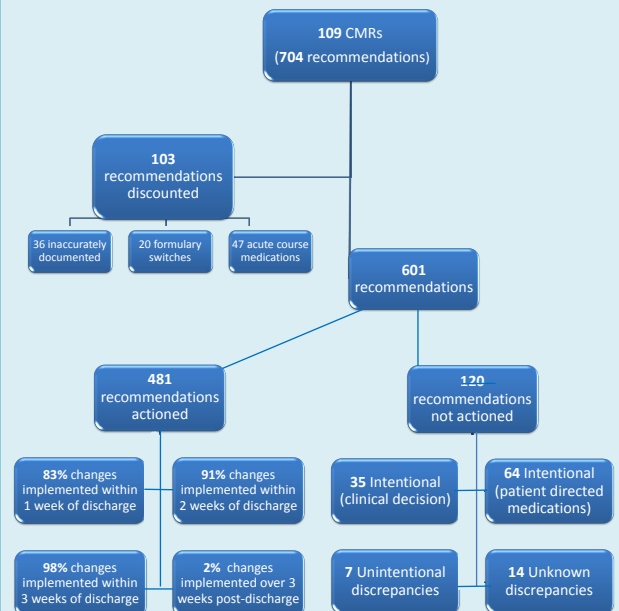
Phase two: Visits to 13 surgeries were arranged between December 2014 and April 2015. The records of patients discharged since December 2014 but at least 2 weeks before the scheduled visit were reviewed. Medication lists were compared with the CMR. Additional information and dates of reconciliation were noted.

Results (Phase 1)



75% (468/626) (95% CI 72.7–78.4%) of changes were actioned 3 weeks post-hospital

Results (Phase 2)



The median time between CMR receipt and reconciliation was 2.5 days (IQR, 0-4). When active changes were made, 82% (397/481) were implemented within 1 week, and 91% (439/481) within 2 weeks of discharge.

Discussion

- **Phase one** showed that when assessing post-hospital reconciliation from a hospital perspective, it appeared that 75% of changes were actioned by GPs.
- In **Phase two** however, when GP systems could be interrogated, 88% of recommendations were reviewed by a GP and a deliberate decision was made.
- This includes where an intentional clinical decision had been documented or where the instructions for the medicine were not updated because it is a patient directed medication, such as analgesia or laxatives.
- There was no documented reason for the majority of unactioned changes, which has clear patient safety implications.
- Only a minority of hospital discharge medication lists and GP medication lists will match at any one time, which challenges the current assumption that if a patient is readmitted within a month of discharge, their last discharge medication list can be assumed to be their correct drug history.
- **Limitations:** 8/21 surgeries did not participate in phase two. It was not possible to ask GPs their reasons for not implementing recommendations.

**Exploration of discrepancies between GP's medication
list and hospital clinical medication review letter**

Sujata Lama

**In partial fulfilment of the requirements of the MPharm degree,
King's College London, University of London**

Supervisors: Ms. Raliat Onatade and Ms. Jennifer Stevenson

January 2015

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Abstract

Exploration of discrepancies between GP's medication list and hospital clinical medication review letter

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Objectives: To evaluate whether medication changes outlined on Clinical Medication Review Letter matched medications recorded by General Practitioner three weeks post discharge.

Methods: This was a retrospective cohort study conducted on patients discharged from four geriatric wards. The medication discrepancies between the hospital letter and General Practitioner's list were explored. The natures of discrepancies were identified. The clinical significance of discrepancies associated with high-risk drugs were evaluated. Medication-related readmissions were assessed to check whether they were due to failure of implementation of medication changes at primary care.

Key Findings: One in six medications had discrepancies and 70% of medication lists did not match: 10% had none of the medication changes implemented; 60% matched partially. The most common discrepancies were missing drugs and different doses. The medications with highest discrepancies were laxatives, analgesics followed by cardiovascular medications. 15.2% (16) patients had discrepancies with high-risk medications such as cardiovascular medications and anti-coagulants. 4.8% (5) of these were evaluated as clinically significant which could result in harm to the patient and require intervention or hospitalisation. However, readmissions were not related to failure of implementation of medication changes.

Conclusions: Medication discrepancies are common when elderly patients are transferred from hospital to primary care. Some discrepancies may result in potential harm to the patients leading to possible readmission. To ensure patient safety and prevent medication-related harm, a robust way of transferring accurate information is required. Further studies are required to assess the impact of the Clinical Medication Review letters on medicines reconciliation at primary care.

Keywords: hospital discharge, older adults, General Practitioner, Clinical Medication Review letter, medication discrepancies

PW26

Post-hospital medicines reconciliation: The impact of
providing enhanced information regarding
medication changes

Amadu R., Adebimpe F., Onatade R.

Oral Communications, Awards and Poster Presentations

Presentation
order

Oral Communications, Friday 13th November 2015

OC 1	An evaluation of the effectiveness of the Exeter cluster pharmacy service Kate Emblin, Sara Dilks, Ian Nash, Sarah Fowler, Gillian Smith, Sally Jefferies, Karena Mulcock. Northern Devon Healthcare NHS Trust, Exeter.
OC 2	Cognitive and academic predictors of a pharmacy students' performance in a prescription-screening task Greg Scutt ² , Sabrina Hasan ¹ and Myrna Gayed ¹ , 1. School of Pharmacy and Biomolecular Sciences, University of Brighton, 2. Brighton and Sussex Centre for Medicines Optimisation, University of Brighton
OC 3	A Region Wide Evaluation of Pharmacy Contributions in East Midlands Acute Hospital Trusts Anna Braithwaite. East Midlands Clinical Pharmacy Network (EMCPN), Pharmacy Department, Chesterfield Royal NHS Foundation Trust
OC 4	Improving the provision of 7-day Pharmacy Services in a large teaching hospital Andrew Lowey, Jane Andrews, Stephen Ashmore, Gill Sunderland, Rachel Smith, Julie Mansell, Catherine Hughes, Chris Acomb, Deborah Armstrong, Graham Cox, Mark Stringer, Gillian Horne, Una Lavery. All authors - Leeds Teaching Hospitals NHS Trust
OC 5	Post-hospital medicines reconciliation: The impact of providing enhanced information regarding medication changes Amadu R, Adebimpe F**, Onatade R*, *Kings College Hospital NHS Foundation Trust, **University College London School of Pharmacy
OC 6	Are prescribers identifiable from inpatient medication orders? Sheatha Latif ¹ , Seetal Jheeta ¹ and Bryony Dean Franklin ² 1. Imperial College Healthcare NHS Trust, London UK, 2. UCL School of Pharmacy, London

UKCPA Awards (Poster) Section

The following papers won an award during 2015

	UKCPA/Biogen Multiple Sclerosis Award 2015 A cross sectional survey of patient-reported side effects experienced with dimethyl fumarate for the treatment of relapsing remitting multiple sclerosis Weir, NM and Murray, LJ, Pharmacy and Prescribing Support Unit, Southern General Hospital, NHS Greater Glasgow and Clyde
	UKCPA/Astellas Antimicrobial Management Award 2015 The impact of a pharmacist led multidisciplinary review of restricted antimicrobial prescriptions at a Teaching Hospital Orla Geoghegan ¹ , Nick Cooley ¹ , Elli Demertzi ² , Rekha Lopez ² , Berge Azadian ² , ¹ Chelsea and Westminster Healthcare NHS Foundation Trust, ² Imperial College Healthcare NHS Trust

UKCPA Clinical Research Grant (Poster) Section

The following paper successfully secured UKCPA research funding

	Unlicensed medicines use in the UK: A systematic review and quality assessment of published guidelines Donovan GR, Parkin L, Wilkes S, Brierley-Jones L, University of Sunderland, Sunderland
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Poster
Number

Poster Presentations

1	Does pharmacist review of electronic referrals to obstetric services improve triage to pharmacy? Alexander B. Mullen ¹ , June Grant ² , Nouf Abutheraa ¹ , 1. Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, 2. NHS Greater Glasgow and Clyde
2	Pharmacist Involvement in Pre-Operative Assessment Clinics Wigg, D.N., Blain, F., Riley, S., Mayers, L. North Bristol NHS Trust
3	The impact of ready-to-use vials on fentanyl usage in critical care Gillian Cavell, King's College Hospital NHS Foundation Trust. London
4	An Audit Assessing the Prescribing and Monitoring of Sodium Chloride Containing Fluids in Children Clarke, D. Palfreyman, T. Haley, H., University Hospitals of North Midlands NHS Trust, Stoke-on-Trent
5	An Evaluation of Pharmacist-led Community Hypertension and Lipid Clinics Marie Fotso-Guifo ¹ , Gayle Campbell ² , Imran Hafiz ² , Victoria Collings ² , King's College London ¹ , St Thomas' Hospital, Guy's and St Thomas' NHS Foundation Trust, London ²
6	Unforeseen factors affecting E-prescribing and medicines administration system (EPMA) implementation Rick Cooper, John Warburton, University Hospitals Bristol NHS Foundation Trust
7	Towards an improved service "Seven Days a Week" Sharn Day, Ann Page, David Corral, Hull and East Yorkshire Hospitals NHS Trust
8	Development of case scenarios to support decisions on polypharmacy reviews Gillian Elkin, Anne Kinnear, Moira Kinnear, NHS Lothian Pharmacy Service, Edinburgh

OC4. Improving the provision of 7-day Pharmacy Services in a large teaching hospital

Andrew Lowey (andrew.lowey@nhs.net), Jane Andrews, Stephen Ashmore, Gill Sunderland, Rachel Smith, Julie Mansell, Catherine Hughes, Chris Acomb, Deborah Armstrong, Graham Cox, Mark Stringer, Gillian Horne, Una Laverty.

All authors - Leeds Teaching Hospitals NHS Trust

This study did not require ethics approval

Background

The need to prioritise the improvement in the provision of pharmacy services across seven days was highlighted in a recent national report¹. Many of the report's 10 key standards can be applied to pharmacy services. Particular focus is attached to the need to have pharmacy staff as part of the multi-disciplinary team, and a recommendation to complete medicines reconciliation within 24 hours of admission. In January 2014, a working group was formed to respond to the report.

Objectives

1. Improve the presence of pharmacy staff on wards at weekends
2. Improve medicines reconciliation performance across seven days
3. Improve discharge turnaround times

Method

New integrated 7-day rotas of pharmacists, technicians and support staff were created for each of the 5 main clinical teams, with a particular focus on acute medical admission areas. All new staff were employed with an increased weekend rota commitment of 1 in 4 (previously 1 in 5); there were no enforced changes to terms & conditions for existing staff.

A patient prioritisation system and a beginning of shift "staff huddle" was devised in to enable staff to be directed where needed.

A new pharmaceutical care section was embedded in the medicines chart to improve clarity of completed and outstanding tasks, and an electronic handover tool was used to create a team handover tool for each shift.

The resident on-call service was replaced with 24 hours on-site pharmacist shift cover, and dispensary rotas were strengthened until 10pm. Routine aseptic services opening hours were increased to 8am-8pm Monday-Friday and 8am-6pm Saturday & Sunday.

A three year structured training programme was put in place to support the foundation pharmacists who provide the overnight service. A set of competencies need to be completed by each pharmacist during their first year before working alone overnight in their second year.

Results

The creation of new integrated rotas facilitated access to at least one specialist pharmacist in each clinical team, seven days per week (e.g. access to a paediatric pharmacist across seven days). Overall, 10 specialist pharmacists and 8 technicians & support staff are typically employed per weekend day across the 5 teams (previously only 3 pharmacists). For context, the Trust has around 1900 beds.

There was no increase in staffing establishment to facilitate these changes.

Medicines reconciliation rates within 24 hours of admission (measured at the completion of the review process but not resolution of all issues) increased from 68% in September 2014 to 79% in March 2015, despite winter bed pressures. Medicines reconciliation rates for patients admitted on a Saturday improved from 0% to 41% during the same period.

Near-to-patient presence in acute medicine helped improve the turnaround of discharge prescriptions with 96% being processed in less than 2 hours, and 84% in less than an hour.

Conclusions

Significant progress has been made in order to meet the needs of our patients across seven days. Further work is needed to roll out and improve resilience.

References

1. NHS England. NHS Services, 7 days a week forum: summary of initial findings (December 2013). <http://www.england.nhs.uk/wp-content/uploads/2013/12/forum-summary-report.pdf> (Accessed 15.6.15).

Testimonials

"It made such an enormous difference - patients received their non-stock medication promptly, and discharge medications were delivered without delay, helping patient flow, and reducing patients' waiting. The service ran smoothly and efficiently and we had no complaints. The difference was massive"

Romy Smith, Senior Sister – Acute Medicine

OC5. Post-hospital medicines reconciliation: The impact of providing enhanced information regarding medication changes

Amadu R* (ramadu@nhs.net), Adebimpe F**, Onatade R*,

*Kings College Hospital NHS Foundation Trust, **University College London School of Pharmacy

Background

The provision of accurate, comprehensive information on medication changes after a hospital admission is important. In older patients, medication discrepancies may negatively impact morbidity¹. A Trust initiative was started to improve the information on medication changes sent to GPs at discharge. A separate clinical medication review letter (CMR) was developed, with sections for details/reasons on medications continued, stopped and changes. The project aim was to investigate whether the provision of the CMR impacted on post-hospital medication reconciliation. The primary objective was to compare the rate of medication discrepancies in GP lists between patients who did and did not receive a CMR, 4 weeks post discharge.

Method

This was a non-randomised study. Data was collected over a 7 week period (February - April 2015). The two wards where the CMR service is commissioned were labelled as intervention wards; two similar wards were selected as natural controls. At discharge, the intervention patients and their GPs received a standard discharge notification (TTA) plus an additional CMR letter. Control patients and GPs received a TTA but no CMR. Current medication lists were requested from the patients' GPs four weeks after discharge and compared to their discharge medication lists.

Statistical analysis was conducted using SPSS v21. Ethics approval was not required because there was no change or intervention in patients' treatment/management during the study.

Patients who died prior to data collection were excluded.

Results

149 patients were discharged from the four wards during the study period (87 interventions, 62 control). Data was available for 86 patients (49 intervention, 37 control); 30 patients had died and 24 patients had no current GP information on record. 9 patients had no CMRs/TTAs. Mean number of drugs at discharge was 11 for intervention and 9 for control.

- Groups were similar with respect to age, gender, length of stay and comorbidity (Mann-Whitney U, $p > 0.05$)
- Medication lists of 86% patients from the intervention wards and 60% from the control wards fully matched four weeks after discharge. (Chi Square, $p = 0.006$)
- 7/49 patients in the intervention group had 12 discrepancies, while 15/37 patients in the control group had 35 discrepancies
- Patients without CMRs were more likely to have at least one discrepancy (Chi Square, $p < 0.005$, odds ratio = 4.1, 1.45 – 11.5)
- There was a significant difference between the groups regarding the number of discrepancies (Mann-Whitney U, $p = 0.024$)
- The only variable that predicted if a patient would/would not have a discrepancy was having a CMR (logistic regression $p = 0.030$).

Conclusions: Patients with a CMR had significantly fewer medication discrepancies than patients without. GP medication lists were more likely to match hospital records if a CMR had been provided. The provision of detailed information on medication changes at discharge supports reconciliation in primary care, leading to fewer errors and increased patient safety. The main limitation of this work is that the clinical significance of the discrepancies was not assessed.

References

1. Coleman, EA *et al.* Posthospital Medication Discrepancies: Prevalence and Contributing Factors. *Arch Intern Med* 2005; 165: 1842-7.

OC6. Are prescribers identifiable from inpatient medication orders?

Sheatha Latif¹ (sheatha.latif@imperial.nhs.uk), Seetal Jheeta¹ and Bryony Dean Franklin²
1. Imperial College Healthcare NHS Trust, London UK, 2. UCL School of Pharmacy, London UK

Background

Despite local hospital policy stipulating that prescribers must print their name and contact number on inpatient medication orders on paper drug charts¹, previous local work has shown that prescribers often only provide their signature. Consequently, prescribers may be unidentifiable and difficult to contact for questions relating to medication orders or to provide feedback on prescribing errors. A recent local initiative for Foundation Year 1 (FY1) doctors helped improve prescriber identification from approximately 6% to 50% of FY1 medication orders in 2013-14². However, the prescribing practice of prescribers across all grades and professions was not known. We aimed to determine if our overall cohort of prescribers were adhering to hospital policy and were identifiable from their inpatient orders. Personalised name-stamps had been issued to all FY1/2 doctors, and other prescribers who requested them during August 2014.

Objectives

To measure the percentage of inpatient medication orders where prescribers: 1) printed their name in addition to their signature; 2) were identifiable either through a printed name or legible signature; and 3) printed their contact number.

Method

An audit approach was used, with standards (set at 80%) derived from local policy. All NHS wards were included except critical care, which used electronic prescribing. A data collection tool was developed and piloted. Data were collected from the first three drug charts encountered on each ward in January 2015. Medication orders were assessed for the presence of the prescriber's signature, printed name (handwritten or stamped), legible signature (as determined by the auditor) and contact number. Data were summarised descriptively. This study did not require ethics approval and was approved locally as an audit.

Results

Data were collected from 1,987 medication orders on 156 drug charts sampled from 52 wards across four hospitals. Overall, 5.8% (n=115) of medication orders included both a printed name and signature; for 6.8% (n=135) the prescriber was identifiable from either a legible signature or a printed name, and 10.5% (n=208) included a contact number.

Conclusions

Findings suggest that identification of prescribers of all grades across various specialities is poor within our trust. This may potentially jeopardise patient safety in the event of a query and limits the feedback prescribers receive on prescribing errors.

While the large sample size was representative of the trust, the data collection method did not take into account that healthcare professionals can sometimes identify prescribers due to familiarity. However, prescriber identification is essential as multiple staff encounter prescriptions from unfamiliar prescribers due to shift patterns and patient transfers.

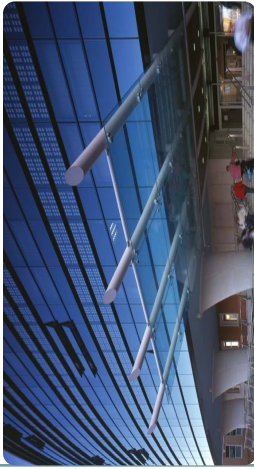
Despite high name-stamp usage during a previous audit, the present findings suggest that their use is not widespread, questioning their impact on prescribing behaviours in the absence of other interventions and education. Further interventions, including prescriber education, are recommended to improve prescriber identification while paper prescribing is still in use.

References

1. Nathan, C. 2012. Imperial College Healthcare NHS Trust Prescribing Medicines Policy (Version 22, Date written: 27.04.2012, Date approved: 30.04.2012)
2. Franklin, B.D. *et al.* 2014. Shine 2012 Final Report. Imperial College Healthcare NHS Trust, London.

Post Hospital Medicine Reconciliation:

The impact of providing enhanced information regarding medication changes



Rabinatu Amadu
Raliat Onatade
Faith Adebimpe

Overview

- The story of patient JH
- Background to the project
- The project
- Method
- Results
- Discussion/Conclusion
- Questions

The story of patient JH

- Patient JH 87 year old Caucasian gentleman
 - Discharged from hospital
 - Medication reviewed
 - Changes recorded on discharge notification
- Patient readmitted 3 weeks later :
- Acutely unwell
 - Bleeding/bruised
 - INR 18
- Drug History:
- warfarin 3mg
 - rivaroxaban 15mg
 - aspirin 75mg
 - citalopram 20mg
 - lansoprazole 30mg
 - Calceos

Background

- Up to 17% of unplanned admissions in over 65s are due to medication discrepancies¹
- 70% of elderly patients are affected by medication discrepancies when their care is being transferred across care settings²
- Timely transfer of medication information to GP after hospital admission is crucial
- Therefore it is important for GPs to accurately reconcile patients' medications on discharge

1. Comp P et al. Discrepancies in medication information for the primary care physician and the general patient at discharge. *Ann Pharmacother* 2012; 46: 983-990.
2. NICE Guidelines CG76: medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence (2009)

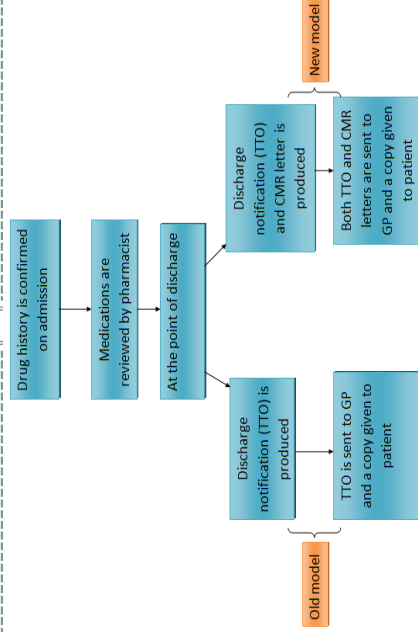
Background cont'd

- In 2014/15 Kings College Hospital, were commissioned to undertake a pharmacist led clinical medication review (CMR) service
- The focus of this service was to provide detailed medication information to GP on discharge to facilitate medication reconciliation
- The service was provided for patients
 - On two designated elderly care wards
 - Patients 65 years and over
 - Length of stay \geq 7 days or more
 - On polypharmacy
 - High risk medications

Background cont'd

- At discharge all medication changes are documented and a CMR letter is produced by the pharmacist
- The CMR contains enhanced information regarding medication changes, stopped and newly started
- A copy of the CMR letter is sent to the GP within 72 hours of discharge and a copy given to the patient

The Service



The Project

Aim

To investigate whether the provision of the CMR letter had an impact on post hospital medication reconciliation

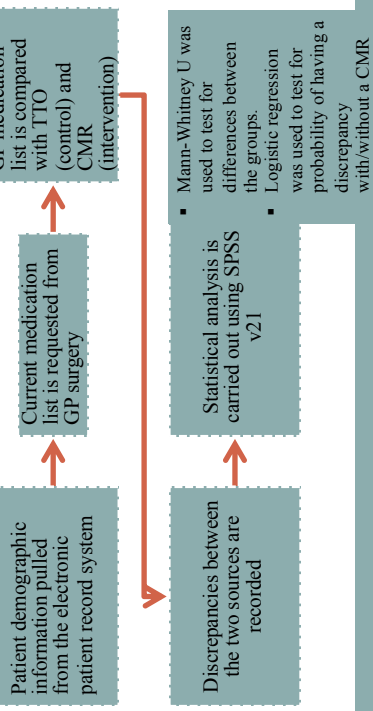
Objectives

- To compare medication lists of GPs with CMR letters or discharge notifications to determine the presence of discrepancies
- To investigate whether the provision of a CMR letter has an impact on medication discrepancies four weeks after discharge

Method

- This was a non randomised intervention study
- Data was collected over a 7 week period between February and April 2015
- Control group (2 wards) = TTO
- Intervention group (2 wards) = TTO and a CMR letter

Method Cont'd



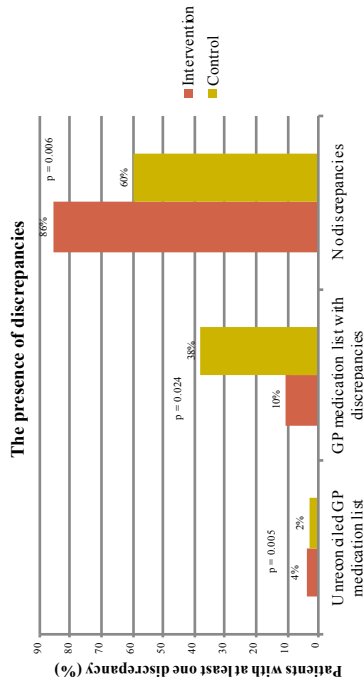
Other considerations

- Exclusion criteria:**
- patients under 65 years with length of stay less than 7 days (not part of commissioned service)
- Ethical approval :**
- was not needed for this study
- Trust approval:**
- was sought and obtained
- Pilot study:**
- data collection was piloted for one week

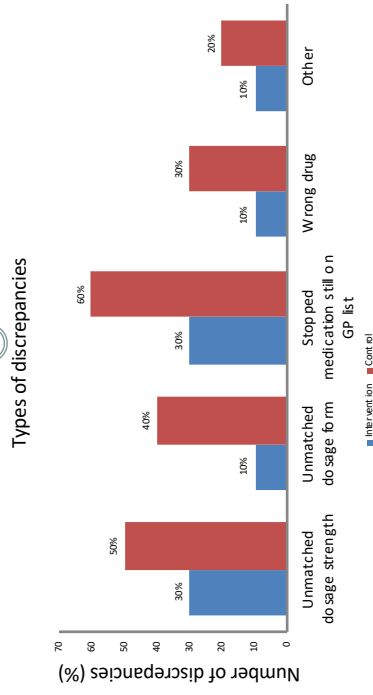
Baseline data

	Intervention (n = 49)	Control (n = 37)	P value
Average age	86	85	p< 0.05
Female : Male (%)	45:55	43:57	p< 0.05
Mean length of Stay	22 days	24 days	p< 0.05
Average co-morbidity index	5.9	5.8	p< 0.05
Mean num. of medicines on GP list	10	9	p< 0.05
Mean num. of medicines on CMR/TTO	10	11	p< 0.05

Results



Results



Discussion/Conclusion

- Patients with a CMR had significantly fewer medication discrepancies than patients without
- GP medication lists were more likely to match hospital records if a CMR had been provided
- The provision of detailed information on medication changes at discharge supports reconciliation in primary care
- The main limitation of this work is that the clinical significance of the discrepancies was not assessed

Sample discharge notification

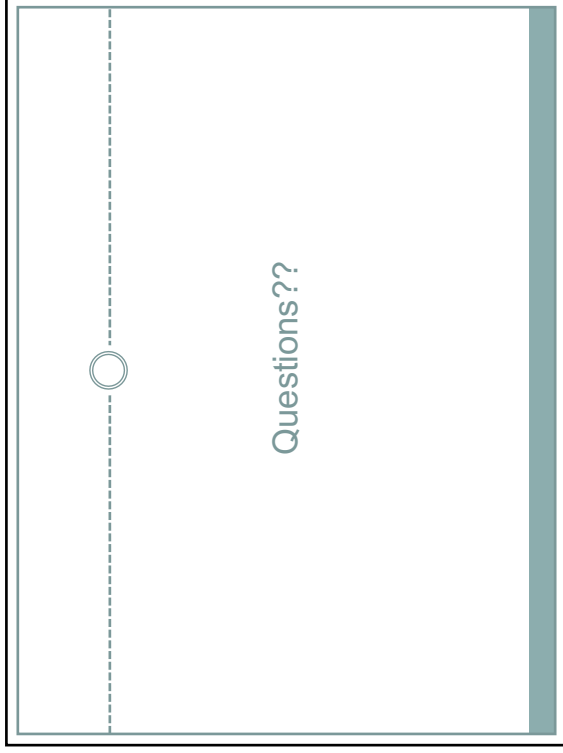
Mr. J. Smith
 123 Main Street
 London, EC1A 1AA
 Tel: 020 7123 4567
 Email: j.smith@example.com

Medication List
 Paracetamol 500mg tablets
 Ibuprofen 400mg tablets
 Lisinopril 10mg tablets
 Simvastatin 20mg tablets
 Folic acid 5mg tablets
 Vitamin D3 1000IU tablets
 Aspirin 75mg tablets
 Metformin 500mg tablets
 Clozapine 150mg tablets
 Zolpidem 12.5mg tablets
 Sertraline 50mg tablets
 Duloxetine 60mg capsules
 Amitriptyline 25mg tablets
 Gabapentin 300mg capsules
 Pregabalin 150mg capsules
 Venlafaxine 75mg capsules
 Escitalopram 10mg tablets
 Citalopram 30mg tablets
 Fluoxetine 20mg tablets
 Venlafaxine XR 75mg capsules
 Escitalopram XR 10mg tablets
 Citalopram XR 30mg tablets
 Fluoxetine XR 20mg tablets
 Venlafaxine XR 75mg capsules
 Escitalopram XR 10mg tablets
 Citalopram XR 30mg tablets
 Fluoxetine XR 20mg tablets

Discharge Medication
 Paracetamol 500mg tablets
 Ibuprofen 400mg tablets
 Lisinopril 10mg tablets
 Simvastatin 20mg tablets
 Folic acid 5mg tablets
 Vitamin D3 1000IU tablets
 Aspirin 75mg tablets
 Metformin 500mg tablets
 Clozapine 150mg tablets
 Zolpidem 12.5mg tablets
 Sertraline 50mg tablets
 Duloxetine 60mg capsules
 Amitriptyline 25mg tablets
 Gabapentin 300mg capsules
 Pregabalin 150mg capsules
 Venlafaxine 75mg capsules
 Escitalopram 10mg tablets
 Citalopram 30mg tablets
 Fluoxetine 20mg tablets
 Venlafaxine XR 75mg capsules
 Escitalopram XR 10mg tablets
 Citalopram XR 30mg tablets
 Fluoxetine XR 20mg tablets
 Venlafaxine XR 75mg capsules
 Escitalopram XR 10mg tablets
 Citalopram XR 30mg tablets
 Fluoxetine XR 20mg tablets

Sample CMR letter

STOPPED Medications	Notes
Bendroflumethiazide 2.5mg oral, in the morning	Stopped due to low blood pressure
Tamsulosin MR 400mcg oral, in the morning	Stopped, patient is now on long term catheter
Medications on Admissions TO CONTINUE as prior to admission	Notes
Calcicos oral, one twice a day	No change on admission, continue
Alendronic acid 70mg oral, once a week on Mondays	No change on admission, continue
Aspirin 75mg oral, in the morning	No change on admission, continue
NEW/CHANGED Medications	Notes/indication
Ramipril 2.5mg oral, in the morning	Dose reduced due to low blood pressure
Bisoprolol 2.5mg oral, in the morning	Started for atrial fibrillation, please monitor heart rate and blood pressure and up titrate dose to maximum tolerable dose
Ferrous sulphate 200mg oral, twice a day	For microcytic anaemia. Hb = 101g/L on 21/05/15. Please re-check level in four weeks' time
Ergocalciferol 50,000units oral, in the morning for 10 days	For vitamin deficiency. Commenced on 18/05/15. Course to complete on 28/05/15. Last serum level = 18nmol/L on 18/05/15. Please re-check level after this course and review.



Evaluation of the impact of providing GPs with medication review letters for older patients discharged from hospital

Background and introduction

The aim of this paper is to provide a summary of the main findings of projects carried out between Pharmacy and the Department of Clinical Gerontology, with the help of Primary Care colleagues, to evaluate the impact and acceptability of the medication review letters (CMRs).

Three projects were carried out, all with pharmacy undergraduate students.

Project 1

Date: October 2014 to December 2014.

Objective: To assess the extent of discrepancies between CMRs and GP medication lists, three weeks post-discharge. Baseline study to test the feasibility of this method.

Participants: Patients discharged from KCH Denmark Hill site, with a CMR

Method: Three weeks after a patient's discharge, GP surgeries were contacted and asked for a fax copy of the patient's current medication list. This was compared with the CMR and discrepancies noted.

Project 2

Date: February 2015 to May 2015

Objectives:

- To assess the extent of, and reasons for, discrepancies between CMRs and GP medication lists
- To determine the length of time between receipt of CMRs and reconciliation by GPs
- To gain the opinions of GPs and other users on the CMRs

Participants: Patients discharged from KCH Denmark Hill site with a CMR

Method: GP systems were interrogated. Individual patient records were compared with the CMR to see if the recommendations on the CMR had been implemented. Information abstracted included - dates changes were made, and any documentation relating to reasons why changes were not made. Feedback and opinions were gathered from GPs and other users of the CMRs during practice meetings.

Project 3

Date: February 2015 to May 2015

Objectives: To investigate whether the provision of a CMR has an impact on medication discrepancies four weeks after discharge.

Participants: Patients aged 65 years or older, discharged from PRUH wards S1, S2, M2 or Farnborough, with or without a CMR.

Method: S1 and S2 were designated intervention wards. Patients discharged from M2 and Farnborough were controls, as they do not receive CMRs. Four weeks after a patient's discharge, GP surgeries were contacted and asked for a copy of their current medication list. This was compared with the CMR or standard discharge letter (TTA) and discrepancies noted. Age, length of stay, Charlson co-morbidity index and number of medications were also collected.

Findings

Project 1

168 patients received a CMR. GP Medication lists were available for 105 patients. Of the 63 patients who could not be followed up, 14 had incorrect GP details in their records.

- 70% (73/105) of lists did not match. 60% (63/105) partially matched (i.e. some changes were made), 10% appeared to have had none of the recommended changes made.
- 16 patients had discrepancies with 41 high-risk medications, the most frequent being: anticoagulants (6), anti-diabetics (5), diuretics (5) and beta blockers (5).
- 15% of all medications were associated with a discrepancy.

Project 2

Thirteen surgeries took part. 124 CMRs were sent to these surgeries between December 2014 and April 2015. 12% (15/124) were not received by the surgeries. The 109 remaining CMRs resulted in 704 recommendations, of which 601 were changes to be actioned.

- 80% (481/601) changes were implemented
- 20% of all medications were associated with a discrepancy
- 59% (64/109) medication lists had at least one discrepancy
- The mean time between the discharge date and the date when the CMR was reviewed was 6.2 days (range - 1 to 64 days).
- Of the 481 changes that were actioned, 82% (397/481) were implemented within 1 week of discharge, 9% (42/481) between 1 and 2 weeks after discharge, 7% (32/481) between 2 and 3 weeks after discharge. 2% (10/481) changes were implemented more than 3 weeks post-discharge.
- 120 recommendations were NOT implemented/actioned. 29% (35/120, 6% of all recommendations) had documented reasons for non-implementation. There were no recorded reasons for 85 unactioned recommendations. 53% (64/120, 11% of all recommendations) were probably intentional as they were for 'prn' or other patient-controlled symptom relief. 6% (7/120, 1% of all recommendations) were assessed as likely unintentional and the reasons for 14 discrepancies (2% of all recommendations) could not be assessed.
- Feedback was obtained from eight surgeries - 20 GPs and 1 practice pharmacist. All of the GPs had a favourable impression of the service, with GPs from 5 surgeries describing the letters as "useful", "valuable" and "greatly beneficial". The letters save them considerable time when trying to compare new medication lists with old lists and help prevent mistakes. There were no negative views expressed.
- Nine GPs stated that the information provided was clear, straightforward and easy to follow. According to 10 GPs, the table layout was excellent and well-formatted, making it easy to follow and identify the key points. Seven GPs specifically mentioned the benefits of giving a copy of the letter to the patient.
- GPs would like the service extended to all patients with polypharmacy.
- Suggested improvements from more than one GP included -
 - 15 GPs highlighted that the CMR was often received much later than the discharge letter. This resulted in duplication of work, as doctors had to review the two documents at different times. The GPs would like the CMR to be attached to the TTA, or the CMR format to be incorporated into the TTA.
 - The CMR should put the onus on the patient to book an appointment with the GP if any of their medications requires follow-up/review
 - Providing more detailed clinical rationale when a medication is 'stopped as no longer indicated'.
 - That the hospital should not stop laxatives or analgesics such as paracetamol, at discharge. If the patient does not require it during the admission, then change to 'as required'.

Project 3

149 patients were discharged from the four wards during the study period. (87 intervention, 62 control). Data was available for 86 patients (49 intervention, 37 control). 16% (24/149) had none, or old, GP details on record.

- 86% (42/49) patients from the intervention wards and 60% (22/37) from the control wards had no discrepancies four weeks after discharge.
- Statistical analyses showed significant differences between intervention and control groups:
 - There was a significant difference in the number of discrepancies between patients who had a CMR and those who didn't ($p = 0.024$)
 - If a patient had a CMR, they were less likely to have a discrepancy ($p = 0.008$).
 - The only variable that predicted whether or not a patient would have a discrepancy was having a CMR ($p = 0.014$).
 - There were no significant differences in age, LoS, number of drugs and CCI between patients from the four wards, or those who had a CMR and those who didn't. None of these four variables predicted whether or not a patient had a discrepancy.

Conclusions

Discrepancies between GP medication lists and medication prescribed on discharge will always exist for clinical, and other reasons. A significant minority of discrepancies are unintentional, despite the provision of more detailed medication information at discharge on a CMR. However, CMRs reduce the number of discrepancies. GPs are satisfied with the service and value the CMRs highly - they save time in reconciling medication, prevent errors and provide very useful information. They want the service to continue. Ideally the CMR and TTA should be combined.

PW27a

The use of Always Events in a survey of inpatients' experiences with their medication and the clinical pharmacy service

Onatade R, Gujral S, Phul N, Pamanathan K, Torku A, Sawieres S, Oputu T

PW27b

'Always Events' as a method of surveying and improving in-patients' experiences with their medicines and pharmacy.

In: Measuring and improving patients' experience of care. Report of a summit for pharmacy teams. Royal Pharmaceutical Society 2015

38. The use of Always Events in a survey of inpatients' experiences with their medication and the clinical pharmacy service

Onatade R, Gujral S, Phul N, Pamanathan K, Torku A, Sawieres S and Oputu T

Background

The Royal Pharmaceutical Society's Professional Standards for Hospital Pharmacy Services¹ provide guidance on best practices for hospital pharmacy. At this Trust, our clinical pharmacy service's lowest level of compliance was with two standards – (3.1) Patients are given information about their medicines and have expressed needs for information met and (8.2) Feedback from patients informs the development of the service. We recognised that we did not know enough about the experiences patients were having with their medicines and the pharmacy service. 'Always Events' are aspects of the patient experience that are so important to patients and families that health care providers must perform them consistently for every patient, every time². The use of Always Events supports continuous improvement of the patient experience and service delivery. Asking patients about Always Events is another method of gaining feedback about a service. Currently there are no defined pharmacy or medicines-related Always Events in the literature.

Objectives

1. To derive a list of Always Events relevant to inpatients' experiences with their medication and the pharmacy service
2. To develop and conduct a simple survey to measure the occurrence of Always Events and improve our ability to meet RPS standards

Methods

A literature search was carried out using PubMed and EMBASE. Short interviews with doctors, nurses and pharmacists were also conducted. Questions asked were 'List 5 important points that an inpatient should always be told about their medication'; 'If you were an inpatient in this hospital what 3 things would you want to experience with your medicines?' and 'If you were an inpatient in this hospital what 3 things would you NOT want to experience?' Responses were combined with the information from the literature to produce a list of possible Always Events which were incorporated into a patient survey. Approval to approach patients was obtained from the Patient and Public Involvement (PPI) department. Issues assessed during the pilot phase included - time taken to complete the questionnaire, patients' interpretations of the questions, the quality of answers, and how to administer the survey. Pilot responses were also used to compile a list of common answers which could be included as prompts in the final survey. Three pilot rounds were needed. The final questionnaire was approved by the PPI department. 100 patients (50 from cardiac and acute medicine wards on one site and 50 from all wards on the second site) and were approached for the final survey, which took place over 5 days in 2014. Inclusion criteria were - over the age of 18, in hospital for more than two days, understood English, and had the capacity and capability to answer the survey questions. Ethics approval was not required as this was a service evaluation.

Results

Eleven potential Always Events were identified. Three deemed most easily measured and within the control of ward pharmacy staff were chosen as the focus for the survey.

1. Patients should always be aware of common side effects of their medication
2. Patients should receive enough information* about their medication from their pharmacist
3. Patients should always be told about any update to their medication; any new medication or if medication has been stopped

*'Enough information' as defined by the patient.

Piloting showed that all patients should be offered help to complete the questionnaire, although not all would need it. On average, the questionnaire took 8 minutes to complete. The final questionnaire had five sections. Some sections asked patients to tick the applicable statements, whilst others were Y/N questions. Table 1 shows the main results.

Table 1. Key results of the patient survey

Questions	Replies (n= 100)
<i>Information about your medicines</i>	
• I received information on my medication without request*	57%
• The side effects of my medication were not explained to me*	40%
• My questions were answered adequately	50%
• My questions were not answered at all	7%
• The reasons for my medication changes were not explained to me	20%
• I received enough information about my medication*	70%
• Someone from the pharmacy team gave me the information about my medication*	34%
<i>Improvements you would like to see in the medication service provided</i>	
• I would like to receive more information on the side effects of my medication*	41%
• I want more information about the reason for my medication	35%
• I want someone to check with me if my medication is effective and adequate	31%
• The pharmacist should spend more time consulting with the patient	25%
<i>Have you experienced problems with your medication during your stay?</i>	
• I have experienced problems with my medication during my stay	22%
○ I spoke to a nurse about my problem	19/22
○ I spoke to a doctor about my problem	3/22
• I have not had a problem with my medication	65%
○ If I did have a problem, I would speak with a pharmacist	10/65
• Did not answer	13%

*relates to Always Events

Discussion/Conclusions

This study shows that it is possible to develop and measure Always Events, to obtain information on needed improvements in a clinical pharmacy service. The use of Always Events is not common within the NHS. Yet they provide a simple and effective way of defining important aspects of the patient experience and then improving on them.

Limitations – Patients who did not understand English could not be surveyed. There are likely to be differences in their experiences and needs and therefore we are assessing appropriate mechanisms to ensure we do not continue to exclude this patient group (e.g. translating the survey). Our results show that we are not meeting the medicines information needs of many of our patients. This is therefore one of our main areas of focus. We have now defined some standards for the way pharmacy team members interact with patients on the wards. Staff should always identify themselves to patients by name and role, and at least twice during their stay, patients should be asked if they have any questions. Appropriate written and verbal medicines information should also be provided proactively. All staff have access to a website which provides customisable patient information leaflets. All clinical staff are required to undertake the CPPE consultation skills training. These actions will increase pharmacy contact, and our visibility, with patients, and give patients the opportunity to ask questions and provide feedback. Introducing these actions is not expected to increase staff workload, instead, it will focus our efforts on providing a patient-focussed service. The patient questionnaire has been refined and we plan to introduce regular (monthly/bimonthly) surveys of a small sample of patients and feeding back to staff on our performance against the Always Events.

References

1. Royal Pharmaceutical Society (2012). *Professional Standards for Hospital Pharmacy Services: optimising patient outcomes from medicines*. RPS, London: July 2012.
2. <http://www.ihf.org/resources/Pages/Tools/AlwaysEventsGettingStartedKit.aspx>

The use of Always Events in a survey of inpatients' experiences with their medication and the clinical pharmacy service

Onatade R, Gujral S, Phul N, Pamanathan K, Torku A, Sawieres S and Oputu T
 Pharmacy Department, King's College Hospital NHS Foundation Trust, London

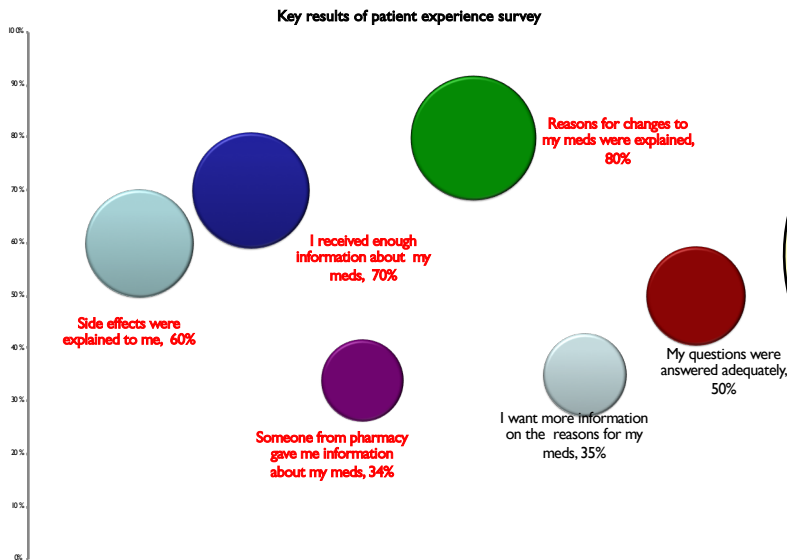
Why?

- ALWAYS EVENTS** - "those aspects of the patient and family experience that should always occur when patients interact with healthcare professionals and the delivery system. Health care providers must perform them consistently for every patient, every time "

Institute for Health Improvement, www.ihl.org
 - Patients should be given information about their medicines and have their expressed needs for information met
 - Feedback from patients should inform the development of services
- There should be some key events relating to medicines which patients should always experience**

What did we do?

- Setting: 1500-bedded acute NHS Foundation Trust
- We identified eleven potential Always Events from patients, medical and nursing staff and the literature
- We chose **THREE** which were directly within the control of the ward pharmacy service
- We developed a survey to elicit information on inpatients' experiences with their medicines and the service
- In the summer of 2014, we surveyed 100 adult inpatients regarding the chosen Always Events and other aspects of their experiences with medicines. Open and closed questions, some with prompts.



Discussion points

- We are currently not meeting the information needs of our patients
- Always Events provide a simple and effective way of defining important aspects of the patient experience and then improving on them
- Feedback from patients will help us improve our service
- We are exploring ways of including patients who do not speak English

Patients should always be aware of common side effects of their current medication
 Patients should be receiving enough information about their medication from their pharmacist
 Patients should always be told about any updates to their medication

What's next?

- Survey has been reduced to six quick questions. Results will be disseminated rapidly and regularly
- 'Hello, my name is...'
- Ask patients TWICE during their stay if they have any questions about their medicines
- Offer a patient-friendly leaflet about their medicines (MaPPs®)
- Everyone to complete the CPPE Consultation Skills workbook
- Badges – 'I'm from Pharmacy, ask me about your medicines'

Measuring and improving patients' experience of care

Report of a summit for pharmacy teams

This report contains PW27b - 'Always Events as a method of surveying and improving in-patients experiences with their medicines and pharmacy'

I. INTRODUCTION

High quality care is something that we all strive to deliver to our patients. A patient's experience of care sits alongside safety and the use of clinically effective treatments as one of the three pillars of a quality service. The importance of listening to and evaluating patient experience cannot be overstated. Good patient experience is positively associated with improvements in clinical effectiveness and patient safety. Accordingly, the Royal Pharmaceutical Society's Professional Standards for Hospital Pharmacy Services have patient experience as the first of the three domains that underpin quality services.

Evaluating patients' experiences and improving care as a result is not easy, we know that organisations across GB who are using the hospital standards are struggling with the best approaches to take. This is not unique to pharmacy; the NHS has only relatively recently begun to recognise the importance of patient-centred care. However, despite the difficulties, we must avoid sidelining patients' experience.

To support hospital pharmacy teams to develop approaches to evaluating and acting upon patient experiences of care RPS held a one day summit on 29 April 15. The summit brought together experts with insight and experience of how to both raise the profile of patient experience in organisations, and how to measure and evaluate it in practice, with local NHS teams sharing their individual approaches. This report is a summary of that day that we hope other organisations can use it as a resource to support the continued development of their approaches to evaluating and improving patients' experience of care.

The RPS would like to thank the patients who attended the day to share their experiences of care and the speakers for their contributions on the day, and for providing a written summary of their presentations.



2. WHY IS PATIENT EXPERIENCE SO IMPORTANT?

CATHERINE THOMPSON, HEAD OF PATIENT EXPERIENCE, NHS ENGLAND. [READ CATHERINE'S SLIDES.](#)

There is good evidence now that better patient experience leads to: higher levels of adherence to recommended prevention and treatment processes; better clinical outcomes; better patient safety within hospitals; less health care utilisation¹. It is therefore important that clinicians resist sidelining patient experience as too subjective or mood-oriented, divorced from the 'real' clinical work of measuring safety and effectiveness.

We know that patient experience is positively associated with clinical effectiveness and patient safety² and that it is one of the central pillars of quality in healthcare. However evaluating the patient's experience of their care is also the right thing to do.

Health systems are taking patient experience seriously and looking at different approaches to ensuring providers of care can measure it, for example in the USA, increasingly patient experience must be reported as part of payment for performance. In NHS England, Clinical Commissioning Groups (CCGs) are held to account through the CCG assurance framework³. We have produced a toolkit based on the In-Patient Survey to help commissioners⁴ as well as putting in place a national Commissioning for Quality and Innovation (CQUIN) payment⁵ for the implementation of the Friends and Family Test. Some CCGs are also taking local approaches for example, local CQUINs or a dashboard across a CCG area.

There are already sources of information that pharmacy teams can use as part of their evaluation of patient experience. These include the Friends and Family test, the CQC in-patient and out-patient surveys, the cancer patient experience survey and some patient led websites such as Patient Opinion and iWantGreatCare.



3. MEASURING PATIENT EXPERIENCE AT NORTHUMBRIA HEALTHCARE FOUNDATION NHS TRUST

JOANNE MACKINTOSH, SERVICE IMPROVEMENT PROJECT LEAD. [READ JOANNE'S SLIDES.](#)

Everyone will experience a visit to a hospital at some point in their lifetime. Irrespective of who we are in our day to day lives, a visit to hospital can involve feelings of vulnerability and reliance on others. The experience of patients and their families is an essential element of any episode of health care.

UNDERSTAND THE LINKS BETWEEN STAFF AND PATIENT EXPERIENCE

When seeking to understand and improve the patient experience it is essential that we also understand and identify how best to improve the experience of staff delivering that care.

Research strongly suggests a correlation between a positive experience of staff and patient experience within the NHS. Variables that relate to a positive experience of care include low emotional exhaustion, good job satisfaction and good organisational climate⁶.

HOW TO COLLECT DATA?

The collection of patient experience data can involve a whole variety of methods. These can include surveys, comment cards, in-depth interviews, patient stories and focus groups. Each method will have its strengths and its weaknesses.

Methods such as surveys will provide less descriptive data but are more generalisable. In contrast, a patient story will provide a greater degree of learning and understanding but is more specific to the patient involved and therefore less generalisable. When selecting an appropriate method of data collection, it is important to consider the aim of the data collection.

Other issues to consider include, the timing of the data collection, how the data will be used, allocation of adequate time to test a chosen approach. Also, ensuring the appropriate resources and infrastructure are in place to facilitate effective collection and dissemination and engagement with staff to ensure they are comfortable as to why data is being collected⁹.

WHAT MATTERS MOST TO PATIENTS?



When seeking to measure the experience of patients it is important to understand what matters most to them. Currently there are various sources of evidence that can inform the development of patient experience measures within a service or organisation.

- **Picker Institute – Core domains for measuring in-patients' experience of care (2009)** Based on the secondary analysis of over 70,000 in-patients this research identifies which aspects of care relate most strongly to a positive patient experience and groups them into core domains⁶.
- **NICE Quality Standard for Patient Experience in NHS Adult Services (2012)** This NICE quality standard provides 14 quality statements and associated measures that represent high quality care for adult patients receiving NHS services. The aim of this quality standard for patient experience is to define best practice⁷.
- **National Voices – The Narrative for Patient Centred Coordinated Care (2013)** National Voices is a national coalition of health and social care charities. They were commissioned by the NHS Commissioning Board in 2012 to develop a narrative for integrated care defined by patients and service users⁸.

HOW DO WE MEASURE PATIENT EXPERIENCE AT NORTHUMBRIA HEALTHCARE FOUNDATION NHS TRUST?

Northumbria has developed a comprehensive patient experience measurement programme and we talk to over 50,000 patients a year. As well as developing patient stories and working with sector organisations such as Age UK and Skills for People to measure experience through observation and face to face interviews, we have adopted the following approaches:

PATIENT PERSPECTIVE SURVEYS:

These comprehensive surveys mirror the national survey questions and are sent to both out-patients and our in-patients once they have returned home. Patient Perspective, a company based in Oxford and approved by the Care Quality Commission, independently evaluates these surveys. Trust-wide results are tracked monthly against our own key performance questions and targets set by our commissioners. Having our teams drive service improvements alongside and through the eyes of patients will, we believe, give us the best chance of rapid, effective and sustainable change. To ensure ownership, results are reported at an individual consultant level, ward level, site and specialty level.

REAL TIME SURVEYS: Our real time surveys take place when patients are still with us in hospital. Results are fed back to clinical teams within 24 hours of speaking to patients, allowing the trust to act rapidly on feedback while patients are still in our care.

2 MINUTES OF YOUR TIME POSTCARDS: This is a short quick exit survey that is used across the trust. Our patients answer six key questions about the quality of our care just before they leave hospital. This survey includes the national friends and family question – all data, including all free text comments, are fed back to clinical teams.

WHAT HAVE WE LEARNT?



It should not be a choice between qualitative and quantitative data. Both have an equal role to play in contributing to the overall understanding of the patient experience.

Organisational culture and context is extremely important, engagement both at board level and frontline are equally important. Also, the timeliness of the data collection and dissemination is important to create a sense of ownership and to trigger actions and improvement.



4. MEASURING PATIENTS' EXPERIENCE: CHALLENGES AND ENABLERS

JOANNA GOODRICH, HEAD OF EVIDENCE AND LEARNING,
THE POINT OF CARE FOUNDATION. [READ JOANNA'S SLIDES.](#)

CHALLENGES TO MEASURING PATIENTS' EXPERIENCE

At the Point of Care Foundation, we think that there are a number of challenges to measuring patient experience:

LACK OF CLARITY ABOUT THE PURPOSE OF MEASUREMENT: Data are collected for three main reasons – for monitoring and accountability; to allow comparison and therefore patient choice; and for improvement. We are talking in this session about **improvement**.

TOO MANY MEASURES! Every trust routinely collects some measures of patient experience: national patient surveys; complaints; and the 'Friends and Family test' ("Would you recommend this service to friends and family?"). In addition different hospital services collect a large amount of data (for clinical audit for example, or in relation to their trust's targets) which may or may not relate to patients' experience. You do not need many measures for improvement – choose a handful of key measures – and you may already be collecting them.

TRAINING STAFF TO UNDERSTAND AND USE MEASURES TO MAKE A DIFFERENCE TO PATIENTS' EXPERIENCE OF CARE: The key principle has to be to measure what *matters to patients*. Ask patients – find out what their experience is like now, and ask them what could be done better. Often patients are the only ones who see the whole picture – what happens when they move from one department in the hospital to another (staff only see their own service). Involve patients – they can help to think about identifying two or three measures which will show whether the service is improving – whether you are moving from the current experience to a better one. Then it is crucial to feed back to patients what has been done with the data they have provided, and what improvements have been made.

MISUNDERSTANDING QUANTITATIVE AND QUALITATIVE DATA: There is often a lack of clarity about the type of measures needed to measure patients' experience, and what they tell us. There can be confusion about the value of quantitative and qualitative data. For example, you might come across the perception that quantitative data (e.g. from the in-patient survey) are flawed. Clinicians may say "It's not relevant" or "Those aren't my patients" or "It's out of date". The value of quantitative data are that they allow you to make comparisons; allow you to generalise from the data; allow you to see changes over time; and allow you to ask "How typical is this?". To counteract the criticisms of quantitative data, make sure the numbers of those surveyed are robustly defined and collected. Use only a small number of measures for collecting 'real time' feedback.

Similarly there is a common response to qualitative data expressed as "that's just one person's story" or "the numbers are too small". The value of qualitative evidence is that stories (and patients' experience told through stories is evidence!) give insight behind the numbers. They allow you to unpick what is happening and to understand the relationship between things that are going on. Qualitative evidence or stories help you to understand the meaning of what happens for patients. With qualitative data the numbers are not the point! And when it comes to improving poor care (in response to "that's just one person's story") Robert Francis has responded "One story is enough".

It is important to bear in mind that data, whether quantitative or qualitative are shaped by the perspective of the reporter, the audience and the context – both have their place and neither should be seen as 'fact' or 'anecdote'. The truth is that you will need both when measuring patients' experience. For example when asking a patient about their appointment you might ask:

- Did the staff introduce themselves?
- How long did you have for your appointment?
- What did you think of the length of your appointment? – why?

In terms of making improvements, local survey data may act as a screening tool to identify potential problems with a service but they do not always provide sufficient detail of what to do to improve that service. A helpful question to ask is “How do you think we could have made your experience better today?”

ENABLERS TO MEASURING PATIENTS’ EXPERIENCE

There may be untapped resources within your trust to help with measurement. There may be expertise in quality improvement methods and data analysis; willing volunteers or students to help with data collection. There are also resources from the King’s Fund and the Health Foundation^{10, 11, 12}. In addition, there are tried and tested methods for service improvement, which teach understanding patients’ experience of your service and how to measure improvement. Toolkits for two approaches can be accessed online: Patients as Partners in Co-design www.kingsfund.org.uk/ebcd; and Patient and Family-Centred Care www.kingsfund.org.uk/pfcc.

HOW TO START THINKING ABOUT MEASURES LOCALLY



Use the following questions to stimulate discussion about how patient experience might be measured in your organisation:

- What measures are already collected by the pharmacy team? Do any of these relate to patients’ experience?
- What measures related to patients’ experience are collected in your trust? Brainstorm as many as you can.
- Now look at each of these and ask why these data are collected? (e.g. is it for monitoring or for improvement). If for improvement do you know how it is acted upon?
- Do you know what the current experience of your service is like for patients?
- Do you know what the ideal experience would be? How will you find out?
- Now come up with three or four existing or new measures which will show how you have moved from current experience to ideal experience.
- What are your challenges and enablers?



5. LOCAL APPROACHES TO PATIENT ENGAGEMENT

Four sites from across GB talked about their different approaches to evaluating and improving patient experience.



'ALWAYS EVENTS' AS A METHOD OF SURVEYING AND IMPROVING HOSPITAL IN-PATIENTS' EXPERIENCES WITH THEIR MEDICINES AND PHARMACY

RALIAT ONATADE, DEPUTY DIRECTOR OF PHARMACY, CLINICAL SERVICES, KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST.

[READ RALIAT'S SLIDES.](#)

At King's College Hospital NHS Foundation Trust (KCH), the pharmacy department has decided to focus on 'Always Events' as a way of highlighting the most important services and experiences for in-patients, with regards to their medication and the clinical pharmacy service. Always Events are 'those aspects of the patient and family experience that should always occur when patients interact with healthcare professionals and the delivery system'. They refer to aspects of the patient's experience that are so important to patients and families that healthcare providers should always get them right. Therefore, the emphasis is on the positive.

In 2014, a list of possible Always Events was generated from previous information from patients, the literature and by asking ward staff. Doctors and nurses were asked – "List 5 important points that an in-patient should always be told about their medication"; "If you were an in-patient in this hospital what 3 things would you want to experience with your medicines?" and "If you were an in-patient in this hospital what 3 things would you NOT want to experience?"

Eleven potential Always Events were identified. Three were chosen as the focus of a survey (see box).

A survey was developed and extensively tested and piloted across both KCH main sites. The survey consisted of open and closed questions, some with prompts and supplementary questions. One hundred adult patients completed the final version. Some patients completed the survey themselves whilst others were assisted. All patients had to have

KCH ALWAYS EVENTS FOR IN-PATIENTS



These were chosen on the basis that they were easily measured and were directly within the control of the ward pharmacy team

- Patients should always be aware of common side effects of their current medication
- Patients should be receiving enough information about their medication from a member of the pharmacy team
- Patients should always be told about any update to their medication; any new medication or if medication has been stopped.

been in-patients for at least 48 hours. The results showed that our in-patients are not always receiving the information that they need, and that their experiences with their medicines could be improved. As a result, we have instituted the following:

- The survey has been reduced to five quick questions, all relating to one or more Always Event
- Auditing for Improvement. We survey at least 40 in-patients every quarter. The number of patients reporting that they have experienced an Always Event is fed back to all staff and displayed around the department. Improvements will be tracked.

A supporting initiative, 'Patient-Centred Pharmacy Practice', has been developed and will formally launch in June 2015:

- Staff should always introduce themselves to patients with their name and role (Hello, my name is...)
- Ask all patients TWICE during their stay whether they have any questions about their medicines
- Appropriate written and verbal medicines information should be provided proactively. All staff have access to a website which provides customisable medicines information leaflets written in plain English (MaPPs®)

- All clinical staff are required to undertake the CPPE consultation skills training³
- Each patient receives a leaflet 'Your medicines in hospital' which explains what happens about medicines, and the support that is available from the pharmacy team
- Pharmacy team members will wear badges 'I'm from Pharmacy, ask me about your medicines'

These actions will increase pharmacy contacts, and our visibility with patients, and give patients the opportunity to ask questions and provide feedback. Introducing these actions is not expected to increase staff workload, instead, it will focus our efforts on providing a patient-focussed service

USING ADHERENCE THERAPY AND MOTIVATIONAL INTERVIEWING TO ADDRESS PATIENTS' CONCERNS ABOUT THEIR EXPERIENCES WITH MEDICATION

LISA STANTON, LEAD PHARMACIST EARLY INTERVENTION IN PSYCHOSIS & LEARNING DISABILITIES, AND RAY LYON, CHIEF PHARMACIST, SUSSEX PARTNERSHIP TRUST.

The Care Quality Commission's (CQC's) annual patient surveys have repeatedly shown that many patients completing the survey feel they are not involved in decisions about their care and are not given enough information about the side effects. The Sussex Partnership NHS Foundation Trust has tried to improve the situation by paying for Choice and Medication, an online database of patient information on psychotropic medicines and related mental health conditions. The information is provided in easier to understand terminology and some leaflets are in simpler formats and more recently translated leaflets are appearing (www.choiceandmedication.org/sussex). This website is actively promoted to staff and patients using posters, reminders in the Trust's quarterly Drugs and Therapeutics Newsletter and on the Trust's website.

This however has not resulted in a dramatic improvement in our patients' responses to the CQC surveys. The results of the 2014 survey are shown in the box, with the Trust being classed as 'about the same' as other mental health trusts for all categories.

Patient focus groups were set up attended by the Director of Adult Services, Deputy Director of Social Care (patient engagement lead) and Chief Pharmacist – Strategy. It was clear that after leaving hospital in particular, patients felt there was little interest in their medication. Two in-patient pharmacists were mentioned unprompted as being particularly helpful during the patient's stay on a ward.

In order to facilitate co-working and staff learning a number of patients are producing a film in conjunction with the trust to help Sussex Partnership staff better understand what patients want from conversations about medication. This will be used in adherence awareness workshops across Sussex Partnership Trust.

For the last four years the Chief Pharmacist-Strategy has been keen to look at utilising Adherence Therapy as developed by Professor Richard Gray, to tackle the issue of improving patients' experience with their medication. Some initial funding was secured from a pharmaceutical company to run a three day Adherence Therapy course led by Richard Gray, targeted primarily at the Early Intervention in Psychosis teams, but with a few spare spaces

offered to other specialities. Releasing staff for three days proved difficult and only a few staff completed the whole course. However the enthusiasm for the approach by those who attended generated a momentum to fund more training. More funding was secured from a second pharmaceutical company for Richard Gray to return, but this time a truncated one day workshop was delivered, split into two half days with attendees expected to utilise the Adherence Therapy questionnaire with at least one client between the two half days. This allowed many more staff to engage.

At approximately the same time as the second set of workshops were being delivered, an audit of the levels of adherence to psychotropic medication just prior to admission, highlighted to the Trust the importance of putting patients at the centre of decision making about their medication to improve adherence levels. All specialities committed to training up Adherence Therapy facilitators to run half day workshops to support staff to utilise Adherence Therapy techniques alongside an online three hour Adherence Therapy training programme. The training of these facilitators was developed and led by Lisa Stanton, our Early Intervention in Psychosis pharmacist. This provided the Trust with an affordable option to raise awareness about the importance of putting patients at the centre of decisions about their medication by listening to their experiences of medication and their beliefs about medication. Sixteen facilitators have now been trained and the first of the workshops by these in-house facilitators have recently been completed. In the coming months we hope to invite all our clinicians and clients to become involved in conversations about medication that are meaningful to them, that value their views and offer a space to investigate what may be helpful in the future. It is an exciting moment to be involved in medicines management at Sussex Partnership Trust.

CQC SURVEY RESULTS 2014

■ Involvement with medications.

For those taking prescribed medication, having their views taken into account when deciding which medication to take.

Score 6.9/10

■ Purposes of medications.

For those prescribed new medication, being given an explanation about the purpose of the new medication.

Score 8.1/10

■ Side effects of medications.

For those prescribed new medication, being told the possible side effects.

Score 5.0/10

■ Information about medications.

For being given information about new medication in a way that was easy to understand.

Score 6.3/10

■ Review of medications.

For having an NHS mental health or social care worker check how they have been getting on with their medication in the last 12 months (for those on prescribed medication for 12 months or longer).

Score 6.8/10



IMPROVING PATIENT EXPERIENCE IN WELSH HOSPITALS

JENNY HARRIES, CHIEF PHARMACIST, TAFF ELY LOCALITY, CWM TAF UNIVERSITY HEALTH BOARD. [READ JENNY'S SLIDES.](#)

Welsh Health Boards have developed a bundle of interventions to enhance the patient experience in hospitals. This work is an enabler to support the Welsh Government's ambition for pharmacy services set out in the RPS report *Your Care, Your Medicines: Pharmacy at the heart of patient-centred care*¹⁴. The Quality and Patient Safety sub-group (QPS) of the Welsh Chief Pharmacists' Committee is driving forward an all Wales approach in response to the recommendations in the report. Initially this work is focussed on the contact with pharmacy that patients experience whilst in hospitals with the following specific outputs being implemented:

- All Wales patients experience surveys
- 'Team pharmacy Wales' uniforms
- Standards for communication with patients
- All Wales patient information leaflets: clinical pharmacy services and out-patients.

PATIENT EXPERIENCE SURVEYS

In February 2014, an all Wales patient experience survey was undertaken in collaboration with Cardiff University, utilising fourth year pharmacy students. Each of six health boards were assigned a student to administer a standard questionnaire to recently discharged medical patients. In total 825 patients (out of 2,242, 37%) responded and the overall satisfaction score ranged from 92-95% satisfied or very satisfied with the way their medicines were dealt with in hospital.

Higher satisfaction was experienced when patients reported one or more of the following during their stay in hospital:

- Having contact with a member of the pharmacy team
- Having the opportunity to discuss their medicines
- Not having experienced problems with medicines
- Being provided with clear written information about their medicines.

Each student provided an individual report to the health board they worked with and these informed local improvement action plans.

The collated data across Wales is being analysed for trends and will inform future work plans, for example addressing patients' comments about discharge medication processes.

The learning from the first patient survey was used to amend the questionnaire to focus more on the problems patients reported, and the survey was repeated in November 2014. The results are currently being collated.

PHARMACY UNIFORMS



The Welsh Chief Pharmacists Committee has supported the recommendation to adopt an all Wales pharmacy uniform. The teal green colour has been approved by the Welsh Government for the pharmacy profession. A phased introduction over two years is planned, starting with technicians and support staff, followed by pharmacists working in patient facing clinical services.

PATIENT INFORMATION LEAFLETS



Leaflets outlining clinical services and out-patients services have been designed and agreed for use across Wales. A standard format will be used, with local customisation as appropriate.

COMMUNICATION STANDARDS



All Wales communication standards aim to ensure that every contact with patients, relative or carers is initiated with good communication. We want them to become a part of 'the way things are done here' and to become embedded into the ethos of hospital pharmacy in Wales. They will be incorporated into local and national training programs and will demonstrate a commitment to improving the patient experience.



NHS TAYSIDE PATIENT AND PUBLIC FORUM FOR MEDICINES (PPFM)

ARLENE COULSON, PRINCIPAL CLINICAL PHARMACIST, NHS TAYSIDE. **READ ARLENE'S SLIDES.**

NHS Tayside has developed an expert group of patient and public members, as a sub-group of our Area Drug and Therapeutic Committee (ADTC). The vision of this group is to have proactive members who have background knowledge of the local and national medicine processes. These members are therefore in a position to actively contribute to the discussions with transparency and openness at our meetings.

The twelve members of the forum are from our NHS Tayside Patient and Public Network and from a variety of local patient interest groups; Multiple Sclerosis Society; Maggie's Centre (Oncology); Respiratory Managed Clinical Network; Parkinson's Disease UK; Dundee Carers Centre; Patient involvement co-ordinator. The group is chaired by Arlene Coulson, Principal Clinical Pharmacist.

Members representing groups from these areas were invited in the first instance as there are forthcoming new medicines being submitted to the Scottish Medicines Consortium and our patient interest group members will be in a position to gain appropriate feedback from their local networks and speak on behalf of a wider patient voice.

These members attend monthly meetings and have been through a one year educational programme with presentations and discussions in the following key areas: licensing of medicines; the role of local formulary/ADTC; the role of Scottish Medicines Consortium; different role of pharmacy: hospital, community and locality; the roles of pharmacy team; where the public can access reliable medicines information on the internet; Prescription for Excellence: A Vision and Action Plan for the Right Pharmaceutical Care through Integrated Partnerships and Innovation. The Scottish Government; and the role of non-medical prescribers.

The role and remit of the group is to:

- Advise of priorities in the service change process;
- And advocate for service change.

- Enhance the quality of new medicines pathways through harnessing user feedback;
- Contribute to the strategic development of introduction of new medicines and pharmacy services;
- Identify gaps in services;
- Highlight information requirements;

The journey that these individuals have gone on has been remarkable. The next stage of our work as PPFM is to up skill the general public with similar knowledge about our local and national medicines processes. A local advertising campaign is being planned to give the general public a greater insight and confidence in NHS Tayside and NHS Scotland and the way we are managing medicines for patients.

You can find out more about how these members became involved with the forum by clicking here: **www.youtube.com/watch?v=6EVudEi8EFE**. Members have shared their experiences of having gained this level of knowledge and expertise, and attending ADTC meetings:

"I had to pause the TV the other day when the BBC news was describing a cancer drug that didn't get through NICE and I could explain to my husband what a QALY (Quality Adjusted Life Year) is"

"I didn't have an appreciation for the diverse range of services that pharmacy offer across the community and in hospital"

"I didn't know I could ask to speak to a pharmacist in my GP practice"

"I didn't appreciate the length of training about medicines a pharmacist has to go through to be able to practice"

"I wouldn't hesitate now to go to my local pharmacist for advice about my medicines prior to seeing my GP"

"From attending ADTC meetings I feel safe and confident with the knowledge, expertise and professionalism of healthcare staff who are discussing medication related decisions at these meetings"

"ADTC meetings have given me confidence that medication decisions are made based on the effectiveness of the medicines and NOT about cost. Where there were discussions about cost, patient outcomes were never compromised by any decisions"

"With the knowledge I have now I understand why some medicines are not available to me as a patient with MS"

6. KEY THEMES FROM THE DAY



KNOW WHAT YOU ARE MEASURING AND WHY

Many trusts already collect data. However, often the focus is on monitoring and accountability rather than improvement of the patient's experience of care. For example, hospitals routinely collect data on the percentage of patients who have had their medicines reconciled on admission to hospital but these data are not collected with a view to improving the patient's experience of care, rather for monitoring performance.

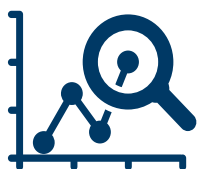
Organisations may have been collecting a range of data for years but often staff do not know why or how best to use the information that it provides. There is a difference between collecting data to measure processes and collecting data for improvement. Researching what is already available in your organisation may give valuable insights into patient experience.



INVOLVE PATIENTS AND STAFF AT EVERY STAGE

Patients are the only people who experience the whole of the care pathway, involving them at every stage of the process both to evaluate their experience and then develop improvement measures is critical to success. It is important not to assume that healthcare professionals know what patients want or what is important to them. Patients need to have input into the questions asked in surveys or the development of information for them as well as the measures themselves.

Staff experience must also be valued in developing strategies to evaluate and improve patient experience. Involving staff has a demonstrable impact on patient care and contributes to a culture that values patient experience.



IDENTIFY HOW TO COLLECT DATA

There are many approaches to capturing patient experience, and all have value and can be used for different purposes. Stories (narrative) and data (numbers) are both important to develop an overall picture of patient experience of care.

Because every patient wants/needs different things there is no such thing as an ideal experience. However, finding common denominators is important.



GIVE FEEDBACK TO STAFF AND PATIENTS

Sharing feedback on the outcome of measures of patient experience is important for patients, to assure them that their feedback matters, and for the teams providing care to motivate them to improve.

"You said We did . . ." feedback is one example of how this can be achieved. Where it can be achieved real time feedback can be very powerful.



ORGANISATIONAL CULTURE IS CRITICAL

The culture of an organisation needs to value patient experience as much as safety and clinical effectiveness. Good patient experiences are positively linked to patient safety; it is important for organisations to make this link. The weight placed on patients' experiences of care needs to be emphasised throughout the organisation at every level, for example, by linking continuing professional development requirements and appraisal with a focus on patients' experience measures.

Patient stories need to be shared widely across the organisation to motivate staff to improve or inspire them to continue. Time and mindset are barriers that a positive culture can overcome to enable valuing patient experience to become a value shared across the organisation.



PHARMACY TEAM MEMBERS NEED TO RAISE THEIR PROFILE

Patients do not experience care in a profession specific silo; pharmacy teams are one part of the team delivering their care. Feedback on medicines use in hospitals involves the entire healthcare team so pharmacy teams need to link with other professional groups.

On wards the pharmacy team need to be more visible and identifiable to patients so they are seen as part of the team delivering care. Uniforms, lanyards and badges as well as better communication with patients are all ways of achieving this.



In-patients' experiences with their medicines—Results of our 2014 patient survey

Shalini Gujral, Naheed Phul, Kristy Pamanathan, Anastasia Torqu, Sara Sawieres, Tase Oputu, Raliat Onatade

Patient Experience Survey

- ▶ RPS Hospital Pharmacy Standards
 - 3.1 Patients are given information about their medicines and have their expressed needs for information met
 - 8.2 Feedback from patients informs the development of services
- ▶ Do we know what experiences patients have in relation to their medication in hospital?
- ▶ If we don't know, we can't improve the information and service provided to patients
- ▶ Are there some key events which patients should ALWAYS experience during their stay – 'Always Events'?
- ▶ Relevant to both sites – DH and PRUH
 - ▶ **NOT a patient satisfaction survey**

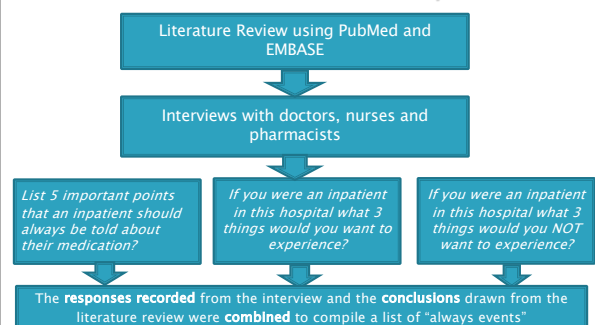
What are 'Always Events'?

Defined as "those aspects of the patient and family experience that should always occur when patients interact with healthcare professionals and the delivery system"

Compare to 'Never Events'

There are currently no defined pharmacy or medication-related 'always events' in the literature

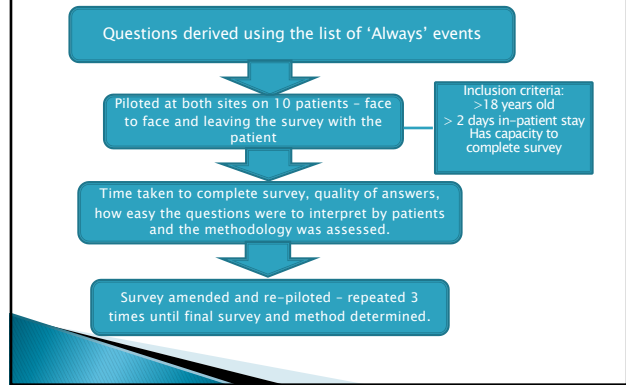
How did we derive these 'Always Events'?



What did we identify as most important?

1. Patients should always be aware of common side effects of their current medication.
2. Patients should be receiving enough information about their medication from their pharmacist.
3. Patients should always be told about any update to their medication; any new medication or if medication has been stopped.

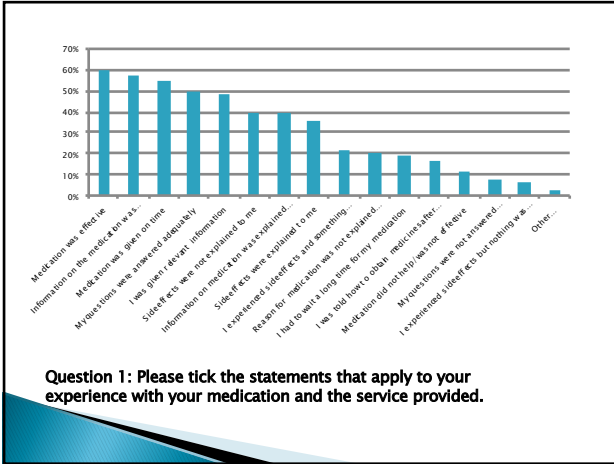
How was the survey developed?



Final Survey

- ▶ Five questions
 - side effects experienced, information received, any problems, issues or difficulties the patient had with their medication and who they did or would speak to
- ▶ 50 patients on each site over 5 days
- ▶ DH site -5 wards in Cardiac and Medicine
- ▶ PRUH - multiple wards over various specialities
- ▶ Some surveys completed by patient alone and some were assisted

Survey number: _____ Ward: _____ The survey started: _____		King's College Hospital NHS NHS Foundation Trust	
1) Please tick the statement that apply to your experience with your medication and the service provided.			
Information on medication was explained to me without request <input type="checkbox"/> Reason for medication was not explained to me <input type="checkbox"/> Side effects were explained to me <input type="checkbox"/> I experienced side effects but nothing was done about it <input type="checkbox"/> I spoke to a pharmacist and something was done about it <input type="checkbox"/> I was given more information <input type="checkbox"/> Medication was given on time <input type="checkbox"/> It took a long time for my medication <input type="checkbox"/> Medication was effective <input type="checkbox"/> Medication did not help/was not effective <input type="checkbox"/> My questions were answered satisfactorily <input type="checkbox"/> My questions were not answered satisfactorily <input type="checkbox"/> I was told how to obtain medicines after being discharged <input type="checkbox"/> Other: _____ If other, please specify: _____			
2) Did you receive enough information about your medication? Yes <input type="checkbox"/> No <input type="checkbox"/>		3) Did the pharmacy team give this information to you? Yes <input type="checkbox"/> No <input type="checkbox"/>	
4) Please tick three improvements you would like to see in the medication service provided at this hospital.			
Have a change in medication <input type="checkbox"/> More information on reason for medication <input type="checkbox"/> More information on side effects of medication <input type="checkbox"/> The pharmacist should spend more time consulting with the patient <input type="checkbox"/> Information should be more relevant <input type="checkbox"/> Check with the patient that the medication is effective and safe <input type="checkbox"/> More communication between doctors, nurses and pharmacist <input type="checkbox"/> Medication should be given in a satisfactory manner <input type="checkbox"/> Side effects should be addressed and medication changed if needed <input type="checkbox"/> Other: _____ If other, please specify: _____			
5) Have you experienced any problems/difficulties or issues with your medication during your hospital stay? Yes <input type="checkbox"/> No <input type="checkbox"/>			
If yes, what did you do? Spoke to a staff nurse <input type="checkbox"/> Spoke to the nurse in charge <input type="checkbox"/> Spoke to a doctor <input type="checkbox"/> Spoke to a pharmacist <input type="checkbox"/> Nothing <input type="checkbox"/> Other: _____ If other, please specify: _____			
6) If you were to experience a problem/difficulty or issue with your medication during your stay, who would you speak to? Staff nurse <input type="checkbox"/> Nurse in charge <input type="checkbox"/> Doctor <input type="checkbox"/> Pharmacist <input type="checkbox"/> Nobody <input type="checkbox"/> Other: _____ If other, please specify: _____			



Results

Question 2: Did you receive enough information about your medication?
70% of patients said yes

Question 3: Did the pharmacy team give this information to you?
34% of patients said that someone in the pharmacy team gave them this information

Results

Question 4: Please tick three improvements you would like to see in the medicines service provided at this hospital.

More information on side effects of medication	41%
More information on reason for medication	35%
Check with the patient that the medication is effective and adequate	31%
More communication between doctors, nurses and pharmacists	30%
The pharmacist should spend more time consulting with the patient	25%
Information should be more relevant	18%
Side effects should be addressed and medication changed if needed	15%
Medication should be given in a more timely manner	14%
Fewer changes to medication	11%
Other ...	7%
I do not feel there are any improvements to be made	
No need for improvement	
The nurses are understaffed -- need more nurses	
Our pharmacist takes endless troubles and if you take something new they will explain everything	
Full service on the weekend	

Results

Question 5: Have you experienced any problems/difficulties or issues with your medication during your hospital stay?
Yes - 22/100 patients
No - 65/100 patients

If yes what did you do?

- Spoke to nurse /nurse in charge - 19/22
- Spoke to doctor - 10/22
- Spoke to a pharmacist - 3/22
- Other - 4/22

If no, what would you have done?

- Staff nurse/nurse in charge - 65/65
- Doctor - 21/65
- Pharmacist 10/65
- Other - 5/65

Overall, 13 patients no response
Patients could select more than one response to the question what did you do/what will you do?

So back to our 'Always Events'....

1. Patients should always be aware of common side effects of their current medication.

60% – side effects were explained to them

- ▶ 6% felt the side effects they experienced were not dealt with.
- ▶ Most popular suggestion for improvement – request for information on side effects (41%).

What can we do?

- Ask patients if they want to know more about their medicines
- Increase our use of MIPS – Subscription website that provides personalised information leaflets (*Speak to Tase, Sandeep or anyone else from Clinical if you want to know more!*)

So back to our 'Always Events'....

2. Patients should receive enough information about their medication from their pharmacist

70% – felt they had enough information on their medication
34% – information came from the pharmacist/pharmacy team

What should we do?

- Pharmacy team are not immediately perceived as the people to speak to when patients encounter issues with their medication
- Member of the pharmacy team to highlight to the patient that they are available if they have questions and informing the patient how they can be contacted
- Proactively ask – “Do you have any questions?”
- Give patients the “Your medicines in hospital” booklet

So back to our 'Always Events'....

3. Patients should always be told about any update to their medication; any new medication or if medication has been stopped.

57% – information on medication was explained to them without needing to ask
39% – information was given once asked
20% felt they were not given a reason for a change to their medication

MIPs can help achieve this

So are patients always experiencing 'Always Events'?

In essence the answer is NO!

What else can we do?

Patients are not always experiencing 'Always Events'

What else can we do?

- ▶ Which patients should be prioritised for counselling – approach priority patients based on specific drugs prescribed/ other criteria?
- ▶ Encourage ward staff to inform patients that they can speak to a pharmacist if they have any questions
- ▶ Posters on wards to encourage patients to ask for their pharmacist if they have any medication related questions?

Be patient-centred

Patient Centred Practice

- ▶ Ensuring each patient receives a 'Your medicines in hospital' leaflet.
- ▶ Promotion of MIPs resource.
- ▶ Using King's Volunteers (ward based) to ask patients if they would like to talk with a pharmacist and then referring the patient to the ward pharmacist.
- ▶ All patients to be asked at least twice during their stay if they have any questions about their medicines.

If we're patient-centred, our visibility with patients will improve



PW28

Time to administration of first dose antibiotics and
associated outcomes
in respiratory sepsis

Gujral S., Onatade R., Mehta R., Hinton J., Maharaj R

Conclusions

Examples of good practice from the opioid incidents are to be shared in the region to develop a consistent approach and improve patient safety. This data collection has been the first collaborative approach across the region to review medication related incidents. This will be repeated, focusing on emerging trends; this data will be presented individually, including relative reporting rates, allowing for benchmarking between Trusts. Where the level of a particular incident is lower than the regional average this will allow us to identify areas of good practice and promote sharing and local adoption of successful approaches. Key recommendations will be progressed and will contribute to joint working between Medication Safety Officers. Consideration is also being given to possible ways of encouraging greater reporting of prescribing errors. This model could be easily replicated in other regions.

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1. Ferner RE, Aronson JK. Clarification of terminology in medication errors: definitions and classification. *Drug Safety* 2006;29:1011–22
2. NHS. Medication Safety: www.nrls.npsa.nhs.uk/resources/patient-safety-topics/medication-safety/ (accessed 4th June 2015)
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26. Analysing the prevalence and documentation of omitted doses in a large acute trust

Stephanie Shale and Kirandip Mandar, Kings College Hospital, Denmark Hill

Background

In February 2010, the NPSA published an alert highlighting risks with omitted and delayed medicines.¹ Recommendations included annual audits of omitted doses. An audit conducted in our Trust is described.

Objectives

To measure rates and reasons for omission in drug administration
To confirm that omissions are documented appropriately on prescription charts.

Method

Ethics approval was not required. A retrospective one day audit of missed doses was carried out. Data was collected on one Wednesday in December 2014. Electronic or paper drug charts for three patients on every ward were included. All regular and 'stat' prescriptions were reviewed. Drug names, numbers of doses due and doses omitted were recorded. Documented reasons for omissions were recorded to determine intentional and unintentional omissions. Drugs were categorised as critical or non-critical according to the trust Critical Drugs List.

The following standards were applied:

100% of critical and non-critical medicines are administered as prescribed unless omitted intentionally due to the following; clinical reason, on advice of the prescriber, patient nil-by-mouth, or patient refusal
100% of omissions are documented on prescription charts

Results

Of 3026 scheduled doses, 96.2% (2912/3026) were administered as prescribed (intentional omissions were recorded under 'administered as prescribed'). Of the critical medicines 97.1% (1200/1236) were administered as prescribed. Critical drugs most commonly omitted were anticoagulants, analgesics and intravenous antibiotics. Eighty of 403 intentional and unintentional omitted doses (19.9%) were inappropriately documented. Of 63 omissions documented as 'Other', 46% (29/63) gave no reason, and 36.5% (22/63) gave a reason which should have been recorded under another option, and 7.9% (5/63) gave a comment which had no relevance to omission. Fourteen critical medicine omissions had no documented reason. Twenty three doses were missed due to drug non-availability.

Conclusion

Most omitted doses resulted from patient refusal. Some may have been justifiable. In some cases patient refusal may have impacted on length of stay (e.g. enoxaparin). Input by pharmacists to explain the importance of medicines to patients may improve adherence. Omissions are poorly documented, particularly when the reason 'Other' is chosen. The importance of avoiding omissions and correct documentation of unavoidable administration omissions needs to be re-emphasised through training. Pharmacists are ideally placed to provide this. All the omissions due to drug non-availability are avoidable as drugs are available 24 hours a day. Due to time constraints, this audit was conducted over a short time-frame. Audits over a longer period could identify medicines regularly omitted due to supply issues and ward stock lists could be adapted to minimise these. One recent study identified that pharmacy-supported drug administration rounds reduced the number of unacceptable omissions from 18% to 1%.² Given this high success rate, consideration should be given to piloting this strategy within our own Trust.

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27. Time to administration of first dose antibiotics and associated outcomes in respiratory sepsis

Shalini Gujral (shalini.gujral@nhs.net), Raliat Onatade, Reena Mehta, James Hinton and Ritesh Maharaj
King's College Hospital NHS Foundation Trust, London

Background

Delay in administration of first dose antibiotics in sepsis has been associated with an increase in mortality¹. Sepsis is defined as a suspected infection with two or more systemic inflammatory responses (SIRS). Guidelines recommend that antibiotics be administered within 60 minutes of diagnosis². To improve the treatment of patients diagnosed with sepsis due to community-acquired pneumonia (CAP), we investigated time to administration of first dose antibiotics (TTFD) and associations between various outcomes and factors.

Objectives

1. Determine time between diagnosis of chest sepsis and administration of first dose antibiotics in the Emergency Department (ED) and Medical Assessment Unit (MAU)
2. Determine if there is a relationship between TTFD and a) Length of Stay (LoS), b) ICU admission and c) mortality

3. Identify if place and time contribute to delayed antibiotic administration

Method

This was a 6 month prospective study in 2012/13. Patients included had a diagnosis of sepsis (SIRS>2 + suspected CAP) made in ED or MAU. Time of diagnosis, antibiotic administration and outcome were determined using patient records. 10-year estimated survival rate was calculated using Charlson Co-Morbidity Index. Multiple regression was conducted to evaluate associations between TTFD and LoS, ICU admission, mortality and time of day. Other factors potentially influencing LoS were included in the model (appropriate antibiotics, age, gender, estimated 10 year survival). Chi-square analyses were performed to determine if there was a significant difference between TTFD in ED and MAU and if time of diagnosis was associated with delayed administration. This study did not require ethics approval.

Results

120 patients were diagnosed with sepsis; mean age 67 (range 19-88, SD 19), 49% female. 52% received antibiotics within 60 minutes from diagnosis; mean 132 minutes (range 0-1252, SD 186). 5% died during admission and 6% were admitted to ICU. 66% received antibiotics within one hour in ED compared to 19% in MAU ($p<0.05$). No association was found between TTFD and LoS, ICU admission or mortality. A weak relationship was found between appropriateness of antibiotics and gender; fewer females received appropriate antibiotics according to local guidelines ($r = 0.23, p<0.05$). Of patients receiving antibiotics outside of working hours (6pm-9am), 56% received antibiotics within one hour compared to 44% in hours ($p>0.05$).

Conclusion

TTFD in chest sepsis was not found to be associated with specific patient outcomes, which is a similar finding to other studies³. There was a significant difference in TTFD between ED and MAU, which suggests differing practice in each area. Future work should be carried out to determine if other factors such as fluid resuscitation are more important to outcomes. Limitations – although a prospective study, actual practice was not observed. Not all variables or patient outcomes could be assessed.

References

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3. Groot *et al.* The association between time to antibiotics and relevant clinical outcomes in emergency department patients with various stages of sepsis: a prospective multi-center study. *Critical Care* 2015;19:194.

28. Auditing the prescribing of extended Venous Thromboembolism (VTE) prophylaxis post colorectal surgery

Zahra Shamshudin (zahra.shamshudin@nhs.net), Sophie Blow, Sushil Maslekar, Leeds Teaching Hospitals NHS Trust, Leeds.

Background

Hospital associated VTE leads to approximately 40,000 deaths in England per year, 25,000 of which may be preventable¹. Major abdominal surgery and surgery for colorectal cancer conveys a high risk of VTE.

Extended prophylaxis (28 days) is recommended by NICE (2010) for patients recovering from such procedures². Leeds Teaching Hospitals NHS Trust (LTHT) has local guidance recommending extended VTE prophylaxis for up to 28 days in patients post major abdominal surgeries¹. The number of patients actually prescribed extended VTE prophylaxis following these procedures at LTHT is unclear.

Objective

- Quantify the percentage of patients who received extended VTE prophylaxis post major abdominal surgery in line with trust guidance.
- Identify how extended VTE is requested, communicated at the point of discharge.

Method

Retrospective review of patients undergoing major colorectal surgery conducted January-March 2015 using the surgical database. The review included; operation notes to see if extended VTE prophylaxis was requested, and the electronic discharge advice note (eDAN) to see if extended prophylaxis was prescribed.

Operation notes including VTE in post-operation instructions were categorised as requesting extended VTE prophylaxis. Subsequently the eDAN was reviewed to ascertain if extended VTE prophylaxis was completed.

Patients with high risk factors for bleeding or patients with concurrent use of anticoagulants were excluded from this study.

This study did not require ethics approval.

Results

Total of 75 patient data was audited.

Of the 75; post-operative instructions included extended VTE in 61% ($n=46$) of cases, which translated onto the eDAN in 40% ($n=30$) of cases, in 21% ($n=16$) it did not.

No written instructions for extended VTE prophylaxis was apparent in 39% of cases ($n=29$). Despite this 23% ($n=17$) had VTE prophylaxis added to their eDAN at discharge.

In 16% ($n=12$) of cases, extended VTE was not prescribed despite it being required.

Overall 37% of the 75 patients audited ($n=28$) were discharged without extended VTE, despite both local and national guidance for extended VTE prophylaxis.

Conclusion

This audit demonstrates that the NICE (CG92) standard² of 100% of patients undergoing major abdominal surgery receiving extended VTE prophylaxis was not met.

Areas for improvement:

- 1) Identification of patients requiring extended prophylaxis,
- 2) Where extended VTE prophylaxis is not requested, the decision needs to be reviewed on discharge by all members of the healthcare team.

Standard documentation is needed to improve communication and record postoperative requirements. Education of the surgical team (nurses, surgeons and pharmacists) regarding need for prophylaxis would support this.

Limitations include timeframe within which the data was collected. A bed crisis in January 2015 led to a disproportionate number of consultants writing discharge letters.

Follow up of patients not prescribed extended VTE prophylaxis is planned.

PW29

A quantitative comparison of ward-based clinical
pharmacy activities in 7 acute UK hospitals

Raliat Onatade, Gavin Miller, Inderjit Sanghera

A quantitative comparison of ward-based clinical pharmacy activities in 7 acute UK hospitals

Raliat Onatade^{1,2,3}  · Gavin Miller⁴ · Inderjit Sanghera⁵

Received: 7 March 2016 / Accepted: 11 October 2016
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Abstract *Background* Several clinical pharmacy activities are common to UK hospitals. It is not clear whether these are provided at similar levels, and whether they take similar amounts of time to carry out. *Objective* To quantify and compare clinical pharmacist ward activities between different UK hospitals. *Setting* Seven acute hospitals in the Greater London area (UK). *Methods* A list of common ward activities was developed. On five consecutive days, pharmacists visiting hospital wards documented total time spent and how many of each activity they undertook. Results were analysed by hospital. The range and number of activities per 100 occupied bed days, and per 24 beds were compared. *Main outcome measure* Time spent on wards and numbers of each activity undertaken. *Results* Pharmacists logged a total of 2291 h carrying out 40,000 activities. 4250 changes to prescriptions were made or recommended. 5901 individual medication orders were annotated for clarity or safety. For every 24 beds visited, mean time spent was 230 min—seeing 6.2 new patients, carrying out 3.9 calculations and 1.3 patient consultations, checking and authorising 1.8 discharge prescriptions, and

providing staff with information twice. Other activities varied significantly, not all could be explained by differences in hospital specialties or Information Technology systems. *Conclusion* This is the first detailed comparison of clinical pharmacy ward activities between different hospitals. There are some typical levels of activities carried out. Wide variations in other activities could not always be explained. Despite a large number of contacts, pharmacists reported very few consultation sessions with patients.

Keywords Benchmarking · Clinical pharmacy · Hospital · Pharmacists · Secondary care · United Kingdom

Impacts on practice

- Hospital clinical pharmacists in the UK undertake a large range of clinical activities on a daily basis.
- The nature and level of many, but not all, clinical activities of pharmacists are consistent across different types of hospitals.
- The presence of electronic patient records and electronic prescribing and medicines administration systems drives changes in practice. The impact of these changes on efficiency and effectiveness is unknown.
- Despite ward-based clinical pharmacists having significant patient contact, relatively few individual consultations with patients take place.

Introduction

The role of pharmacists working on hospital wards has evolved over time, from focusing on medication supply to an increased emphasis on medicines reconciliation and medicines

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37. Application of quality improvement methodology to improve adherence to local hospital prescribing standards

F Cleat, J Main, Z McGroarty, E Milliken, R Robertson, L Summers, L Sutherland, A Coll, C Souter,
NHS Lothian Pharmacy Service, Edinburgh

Context

Pre-registration pharmacists implemented a series of changes to improve foundation year (FY) doctor prescribing in two acute hospitals within one NHS Board. This study did not require ethics approval.

Problem

Local audit¹ across 40 wards with FY doctors identified suboptimal adherence to the local *Golden Rules for Prescription Writing* (Golden Rules) which support safe prescribing.

Assessment of problem

The Golden Rules with the lowest adherence and greatest risk to patient safety were: documenting allergy status (29%); recording antimicrobial indication and duration/review date (40%); and prescribing as required medicines with indication and frequency/maximum daily dose (18%).¹ The need to improve adherence was agreed with senior medical staff, clinical pharmacists, the antimicrobial management team (AMT), and a quality improvement facilitator.

Intervention

For each Golden Rule, changes were implemented within an appropriate clinical setting:

- Allergy status (Admissions unit) - education session to medical staff (all grades); medication administration prompt card inserted in patients' bedside lockers; and an infographic displayed in staff clinical areas.
- Antimicrobials (General surgery) - semi-structured face to face interviews with FY doctors (n=5) and poster displayed next to the antimicrobial guideline on the wards.
- As required medicines (Orthopaedics) - education session and pocket dose reference card (FY doctors).

Process measures based on audit data and clinical settings were to achieve 50% adherence to the Golden Rule for allergy status, and 75% adherence to the Golden Rule for antimicrobial therapy and as required medicines.

Strategy for change

The clinical pharmacist for each area reviewed the interventions and facilitated participation in education sessions. The antimicrobial poster was modified following review by the AMT and FY doctors. Interventions were delivered over 8 weeks.

Measurement of improvement

Data was collected from a convenience sample of prescription and administration charts at baseline and weekly thereafter (Nov–Dec 2015). The sample included patients with allergy and no known drug allergy (n=10 for each); antimicrobial prescriptions (n=10); as required analgesic, antiemetic and laxative prescriptions (n=10 for each). Run charts were generated for each process measure.

Effects of changes

Adherence to the Golden Rule increased from 40% to 45% for allergy status, from 60% to 70% for antimicrobial prescriptions, and from 54% to 78% for as required medicines. Baseline adherence was higher than reported in the audit which may reflect the setting. The results suggest a positive impact supporting safer prescribing however there is still room for improvement, particularly around documenting allergy status. Limitations included FY doctors rotating mid study and accessibility of educational sessions due to shift patterns.

Conclusions

Implementing several changes within a short time frame did not allow sufficient data points to demonstrate sustained change. Involving the wider team (eg nurses) may have increased the impact of the changes. The interventions are being tested in downstream wards (medication administration prompt cards and as required pocket dose reference cards) and incorporated into local training programmes (antimicrobial poster and allergy infographic).

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38. A quantitative comparison of ward-based clinical pharmacy activities in 7 acute UK hospitals

Raliat Onatade, King's College Hospital NHS Foundation Trust, Gavin Miller, Lewisham and Greenwich NHS Trust, Inderjit Sanghera, London North West Healthcare NHS Trust

Background

The Royal Pharmaceutical Society Professional standards for Hospital Pharmacy Service¹ provide the key principles for a clinical pharmacy service. Despite this, it is not clear whether clinical pharmacy services are provided in similar ways, what differences exist, and whether similar amounts of time are allocated to direct patient care between different hospitals and organisations.

Objectives

The objectives were to evaluate the similarities and differences in clinical pharmacy services between different UK hospitals and provide a basis for benchmarking.

Methods

This was a multi-centre prospective study, involving seven acute hospitals in three NHS Trusts in London. Standardised paper data collection forms with a pre-specified list of activities were generated by pharmacists. This involved several brainstorming sessions, followed by structured discussions to develop an initial list of activities. This list was subsequently validated by another group of clinical pharmacists. The final data collection form included definitions and explanatory notes. Following successful pilots, pharmacists in each hospital collected data for five consecutive weekdays in 2013, on the numbers and types of patients on the wards, activities undertaken, and amount of time spent during ward visits. The range and number of activities were compared. Chi-square tests were used to assess differences in the number of activities reported per 100 occupied bed days. Kruskal-Wallis H was used to test for differences across sites for time spent per patient.

Results

Pharmacists logged a total of 2,291 hours carrying out 40,000 activities. 13,022 inpatient encounters were recorded. For every 24 beds visited, a mean of 230 minutes was spent – seeing 6.2 new patients, carrying out 3.9 calculations and 1.3 patient consultations, checking and authorising 1.8 discharge prescriptions, and providing staff with information twice. 32% (range 17% - 38%) of discharge prescriptions had all medications available for supply direct from the ward. 54% (range 46% – 63%) of discharge prescriptions written by doctors needed correcting. Activity levels which varied significantly between hospitals included the number of care contributions (9 to 43 per 100 beds), pharmacists writing in notes (1 to 13 entries per 100 beds), medication endorsing (14 to 82 endorsements per 100 beds) and time spent per patient daily (6.7 to 13.4 minutes). Not all variations could be explained by differences in hospitals or Information Technology systems. However, the presence of electronic prescribing and medication administration and electronic patient records in one hospital had a significant impact on the clinical pharmacy activity profile, such as more entries in notes and fewer endorsements. The average ratio of patient consultations to patient encounters appeared low, at 6%.

Conclusions

This is the first detailed comparison of clinical pharmacy activities between different UK hospitals. There are some typical levels of activities carried out, allowing benchmarking. Wide variations in other activities could not always be explained. Despite a large number of patient contacts, pharmacists reported very few patient consultation sessions. Limitations include the non-inclusion of clinical pharmacy technician activity, data and possible biases due to the self-reporting nature of the study.

References

1. Royal Pharmaceutical Society. Professional Standards for Hospital Pharmacy Services. 2014.

39. The role of community pharmacists in delivering the 5-year antimicrobial resistance strategy

Clifford E, Devine S, Mills J, Yazdani B, Hawksworth G. University of Huddersfield. Huddersfield, Howard P. Leeds Teaching Hospitals NHS Trust, Leeds

Background

Antimicrobial resistance is a worldwide public health crisis; this study analyses what approaches community pharmacies are currently undertaking in order to adhere to the antimicrobial resistance strategy set out by the Department of Health in 2013¹. By analysing these strategies and setting out an agenda for further strategies to be implemented, it is hoped that antimicrobial resistance will see a reduction in future generations.

Objectives

To determine the knowledge level and delivery of community pharmacists on the UK antimicrobial resistance strategy. To investigate pharmacist's views on challenging GP's about antibiotic prescribing as well as the use of diagnostic and point of care testing for early detection of infections.

Method

This study required and received ethics approval. A pilot questionnaire was designed in collaboration with an antimicrobial stewardship expert and after incorporating feedback from five non-participating community pharmacists it was sent out in January 2016 to participating community pharmacists across Calderdale and Kirklees, following consent from pharmacy managers and superintendents. In order to follow up community pharmacists; questionnaires that had been not been sent back were identified by a number to keep the anonymity of the research. Software, IBM SPSS statistics and Microsoft Office Excel, were used to interpret data.

Results

Fifty questionnaires were received. Only 28 pharmacists (56%) were aware of their local antibiotic guidelines and 38 pharmacists (76%) did not monitor local antibiotic prescribing from their GPs. Only 8 pharmacists (16%) completed CPPE learning in European Antibiotic Awareness week 2015 and 38 (76%) pharmacists did not encourage patients to sign up to become antibiotic guardians. Fifteen pharmacists (30%) never ask what an antibiotic is for and qualitative data from the study showed that pharmacists thought this question too sensitive to ask a patient but would be happy to discuss if this was written on a prescription for antibiotics. Only 23 (46%) pharmacists always check for allergies whereas 27 (54%) sometimes check. During patient counselling, 32 (64%) explained the dose, 31 (62%) explained about completing the course and 26 (52%) explained about the avoidance of sharing antibiotics with friends and family. Only 17 (34%) of pharmacists rate themselves as good antimicrobial stewards but when asked about further services, 37 (74%) pharmacists would consider point of care testing and 45 (90%) pharmacists would consider an expansion of a vaccination programme with 38 pharmacists stating that there needs to be more of an emphasis on hand washing.

Conclusion

This study suggests community pharmacists need more training in local antibiotic prescribing to deliver the 5-year antimicrobial strategy. Potential practice improvements could be made by the inclusion of the indication on an antibiotic prescription and a checklist including allergies of patients, counselling (dose, complete the course, left-overs and common side effects) as well as general hygiene and self-help guides for patients. The study also suggests that diagnostic services are something community pharmacists would develop which may show further implementation of the 5-year antimicrobial strategy.

Reference

- ¹ Department of Health. 2013. UK 5 Year Antimicrobial Resistance Strategy. <https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018> 9 (accessed 1 June 2016)

Benchmarking Clinical Pharmacy Activities

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London North West Healthcare NHS Trust

A comparison of ward clinical pharmacy activities in 7 acute UK hospitals

- Aim: To compare key clinical pharmacist ward activities
 - To quantitatively evaluate similarities and differences
 - To provide a basis for benchmarking
- Setting: Seven acute hospitals, three NHS trusts in London
- Design:
 - Standardised data collection form
 - Common clinical pharmacy activities and tasks
 - Five consecutive days of data collection
 - Processes, not outcomes
- Analysis
 - Chi-square used to assess differences in the number of activities reported per 100 occupied bed days between sites.
 - Kruskal Wallis H was used to test for differences across sites for time spent per patient

Hospital	Description
H1	480-bedded secondary and tertiary teaching hospital, with several clinical specialties. Paper drug charts.
H2	550-bedded secondary and tertiary teaching hospital, majority of which are highly specialised. Paper drug charts.
H3	500-bedded district general hospital, with few specialty services. Paper drug charts
H4	500-bedded secondary and tertiary teaching hospital, with several clinical specialties. Paper drug charts except electronic prescribing in critical care
H5	180-bedded district general hospital, with a few specialty services. Paper drug charts.
H6	660-bedded district general and tertiary hospital, with several clinical specialties. Paper drug charts.
H7	1000-bedded secondary, tertiary and quaternary teaching hospital. Electronic records, prescribing and medicines administration on all non-critical care wards.

Inputs

- 214 pharmacists
- 2,290 hours (range 78 hours to 969 hours)
- 13,000 patient encounters
- 14,300 occupied bed days
- Ratio of patients seen : occupied beds - 82% to 97%
- 3717 new patients reviewed
- Clinical pharmacist minutes per patient
 - 6.7 to 13.6

Quality dimension - Patient-Centredness

- 792 patient consultations.
- 5,380 medications were ordered for inpatient use, either for individual patients or as ward stock.
- 32% (range 17 – 38%) of discharge prescriptions had all medications available for supply direct from the ward.
- 496 discharge medication lists were written by pharmacists at two sites, to improve discharge for patients.

Quality dimension - Safety

- 3,717 new patients reviewed.
- 2,700 medication histories documented.
- A drug allergy or intolerance status was confirmed or clarified 2,895 times.
- 548 rewritten or transcribed charts checked for accuracy.
- 5,901 individual medication orders were annotated for clarity or safety.
- 1,087 discharge prescriptions written by doctors were checked for clinical appropriateness and safety, of which 54% (range 46% – 63%) needed one or more corrections

Quality dimension - Effectiveness

- 4,250 changes to prescriptions were made or requested.
- Patient records were checked for information 5,809 times
- Blood results were checked 6,312 times.
- 2,348 calculations were performed.
- Pharmacists in four hospitals recorded the number of times they made an entry in the patient record. 754 entries were logged, ranging from 9 in H5 to 570 (76% of the total) in H2.
- Pharmacists independent prescribers prescribed 219 items (range 0 in H5 to 66 items in H2).

Benchmarking

	1	2	3	4	5	6	7	p value [§]
Clinical pharmacist minutes per patient seen [†] mean = 10.5 minutes	7.8	10.1	11.4	9.9	7.6	6.7	13.6**	p<0.0005
Activity per 100 occupied beds								
Number of medication histories obtained	19	20	15	22	21	25	17	NS
No. of allergy status clarified or confirmed	12	13	16	16	22	19	30**	p=0.05
Transcription checks performed	4	5	6	4	5	4	2	NS
Number of times patient records were accessed for information	18	21	35	30	15	15	79**	p<0.0005
Clinical pharmacist entry in notes	Not available	Not available	6	Not available	1	2	13**	p=0.001

**Site contributing the greatest variation to that activity

[†]Independent samples Kruskal-Wallis

[§]Chi-square

Benchmarking

Activity per 100 occupied beds	1	2	3	4	5	6	7	p-value (Chi-square)
Number of times blood results were checked	25	29	38	38	14	18	80**	p<0.0005
Number of calculations performed	6	15	21	29**	5	6	21	p<0.0005
Number of medications endorsed /annotated by pharmacist for clarity and/or safety	54	82**	40	64	31	40	14	p<0.0005
Number of interventions	20	32	29	27	9	16	43**	p<0.0005
Number of items supplied	43	56**	38	27	49	33	32	p=0.014
Number of staff education/ information provision episodes	5	10	6	11	5	3	11	NS

**Site contributing the greatest variation to that activity

Benchmarking

Activity per 100 occupied beds	1	2	3	4	5	6	7	p-value (Chi-square)
Total discharge medication prescriptions (screened or written by pharmacists)	7	9	15	9	9	7	15	NS
Percentage of discharge prescriptions (written by doctors) requiring clarification with prescriber and/or correction	46%	47%	56%	51%	54%	55%	63%	NS
Discharge prescriptions completed on the ward	2	3	5	3	2	2	2	NS
Percentage of discharge prescriptions completed on the ward	32%	31%	33%	38%	17%**	31%	Not available	p = 0.039
Consultations with patients	5	6	6	6	7	6	5	NS

**Site contributing the greatest variation to that activity

- ### For every 25 Patients
- For every 25 occupied beds:
 - 215 minutes (range 159 to 331 minutes)
 - 6 new patients seen
 - 5 medication histories
 - 3 from one source & 2 required a second source
 - Allergy status clarified or confirmed for 4 or 5 patients
 - 3 or 4 calculations performed
 - Checked 1 transcribed/rewritten medication chart
 - Ordered 10 items
 - Annotated up to 10 medication orders for safety or clarity
 - Consulted with/advised 1 patient
 - Provide staff with medicines information/advice twice
 - Screened 2 discharge prescriptions
 - 1 required contact with the prescriber for clarification/correction

- ### Discussion
- Lots of planning, preparation and piloting
 - Explanatory notes, definitions were essential
 - Limitations –
 - No pharmacy technician data
 - Self-reported data
 - London-centric
 - Not all activities included (e.g. ward round attendance, antimicrobial stewardship activities)
 - Patient outcomes and experiences not assessed

Discussion

- Electronic prescribing and IT systems can make a big difference to specific activities
 - Is this for the better?
- Independent prescribing minimal
- More time spent on wards = more interventions?
- Patient consultation activities - ratio of patient consultations to patient encounters was 1:6
- More time spent on wards ≠ more patient consultations/counselling

Medicines optimisation

- Draft NICE quality standards
 - People have the opportunity to be involved in making decisions about their medicines
 - Health and social care providers monitor reported medicines-related patient safety incidents to inform cross-sector action and best practice in the use of medicines
 - People admitted to an acute setting, or transferred within acute settings, have a reconciled list of their medicines within 24 hours
 - People discharged from an acute care setting to primary care have their medicines documented in the discharge summary and reconciled in the GP list

Conclusion

- First set of comparative data for hospital clinical pharmacy activities
- Evidence of the range of clinical activities undertaken by hospital pharmacists
- Generalisable
- Some similarities between sites, several differences
- Variations should be explored
- Benchmark activity to build a picture of a typical UK clinical pharmacy service
- Helpful for managers to undertake service development and comparative service reviews
- Can medicines optimisation activities and pharmacy-sensitive outcomes be benchmarked?

Thank you for listening

Any Questions?

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Benchmarking Clinical Pharmacy Practice

Learning Outcomes

By the end of the session, participants will

- Be able to develop, critique and apply benchmarking measures for hospital clinical pharmacy activities and processes
- Be able to identify barriers to benchmarking, and strategies to overcome these barriers
- Be able to recognise typical figures for specific hospital clinical pharmacy activity measures, and analyse reasons why comparative services may lie outside the typical range
- Be able to discuss the feasibility of potential comparative measures for hospital clinical pharmacy sensitive outcomes

Aim: To provide participants with an understanding of how and why to easily measure and analyse clinical pharmacy activities in their organisations. To provide participants with a framework for benchmarking their clinical pharmacy service. To stimulate the debate about measuring the impact of clinical pharmacy activities

Duration: 90 minutes

Session plan:

- Intro & discussion of what we are going to cover (5 mins)
- Talk about how we came about to do this work (5 mins)
- Pros of bench marking (5 mins)
- Barriers of bench marking (could we do this section as groups of 3 and we all lead 1 group, then bring it back to the full group?) (10 mins)
 - Strategies to overcome these
- Small group discussion on what could be bench marked (we could have 3 groups and we all lead one group) - those in attendance would provide their ideas we could then go through what activities we bench marked (20 mins)
- Go through our results (in 3 groups like above?) (30 mins)
 - Analyse these results
 - Similarities
 - Differences
 - Surprises (if any)
 - Reasons
- Feasibility of potential comparative measures for hospital clinical pharmacy sensitive outcomes (5 mins)
- The future (10 mins)
 - Future of this work for us
 - Future for those in attendance
 - ? Bench mark with each other in different areas/type of trusts
 - ? A bigger piece of work covering multiple hospitals

Commented [R1]: How about if the smaller groups discussed both barriers and strategies to overcome these before returning to the full group. Maybe change to 'how to benchmark', rather than barriers?

Commented [R2]: I wonder if it would be better to have this bit BEFORE the barriers or 'how-to'? It might be easier for people to discuss how to do it if they've already thought through what they would like to benchmark

Commented [R3]: I think it would be more helpful to go through our results in the full group, so everyone can hear the same things.

Commented [R4]: Not much time for this, maybe increase to 10 minutes and remove the specific bit on 'pros' – this will be covered during the discussions anyway

Commented [R5]: I like the idea of asking people to sign up to a large project, using ideas from the workshop
Possibly produce a document on potential 'outcome' benchmarking measures and disseminate?

Gavin Miller, Raliat Onatade, Inderjit Sanghera
April 2015



UKCPA
CLINICAL PHARMACY ASSOCIATION

GHP/UKCPA 11th Joint National Conference
Lifting the Lid: Facing the difficulties of
maintaining and enhancing standards
15th – 17th May 2015
The Queens Hotel, Leeds

Session Feedback Form

Your feedback is very important and helps the UKCPA plan future events. Please hand the form in at the end of the session.

Title of session: Benchmarking clinical pharmacy practice

Tutor: Raliat Onatade, Gavin Miller and Inderjit Sanghera

Level: II/M

Date: 16th May 2015 **23 forms completed**

1. How well did the Tutor communicate the session content?

Good **x 22** Satisfactory **x 1** Poor

2. How would you rate the session content?

Good **x 20** Satisfactory **x 3** Poor

3. Was the material pitched at the advertised level?

Too high **x 2** About right **x 20** Too low

4. Did you learn anything new at this workshop?

A lot **x 6** Some **x 14** No, but useful revision **x 3** Nothing at all

5. Do you feel your attendance at this session was worthwhile and met your expectations?

Yes, very Much **x 9** Yes, somewhat **x 14** No, not very No, not at all

PTO

6. If this session is repeated would you recommend it to your colleagues?

Yes **x 12** Yes, but to more senior colleague's **x 3** Yes, but to more junior colleague's **x 3** Yes, but to pharmacists of a similar grade to myself **x 3**

No

7. What was the best part about the session, could it be improved?

Best part:

Reporting of data
Group discussion sharing information from other centre's
I have just started a role as a band 7 MFE pharmacist-fascinating insight into how measure and improve a service!
Understanding how the measure described but not define a pharmacy service
Data very interesting and opportunity to share ideas
Take it nationally!
Thought provoking
Interesting that similar problems are experienced by others
Discussing the results
Discussion what was generated around the speakers benchmarking results. Potential opportunity of inputting /sharing data
Thinking about what to benchmark
Very informative
Realising no one has this cracked!
Group work getting me to think about what data I collect and how I use this data

Improvements:

Capture the ideas of others
I would have liked more time to discuss how we could all feed into this potential national benchmarking collection
Link to outcomes
handouts
some information on outcomes you used to validate the data you collected

8. Can you suggest relevant topics for inclusion in future sessions?

How this info can be used to increase productivity and outcome measurement
Quality improvement
Creativity innovation

9. Any other general comments?

Excellent, much food for thought and ideas for action
Thank you!
Well led session
Very warm in the room and so got a bit sleepy and tired. This was not to do with the speakers, just the heat in PM 😊

Please state your preference to your comments being used in future UKCPA marketing literature:

I am happy for my comments to be used to promote future events

I would prefer my comments not to be used to promote future events


Thank you.

PW30

The incidence and severity of errors in pharmacist-written discharge medication orders

Raliat Onatade, Sara Sawieres, Alexandra Veck, Lindsay Smith, Shivani Gore, Sumiah Al-Azeib

The incidence and severity of errors in pharmacist-written discharge medication orders

Raliat Onatade^{1,2,3}  · Sara Sawieres^{2,4} · Alexandra Veck⁵ · Lindsay Smith^{2,4} · Shivani Gore⁶ · Sumiah Al-Azeib^{2,4}

Received: 5 October 2015 / Accepted: 18 April 2017
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Abstract *Background* Errors in discharge prescriptions are problematic. When hospital pharmacists write discharge prescriptions improvements are seen in the quality and efficiency of discharge. There is limited information on the incidence of errors in pharmacists' medication orders. *Objective* To investigate the extent and clinical significance of errors in pharmacist-written discharge medication orders. *Setting* 1000-bed teaching hospital in London, UK. *Method* Pharmacists in this London hospital routinely write discharge medication orders as part of the clinical pharmacy service. Convenient days, based on researcher availability, between October 2013 and January 2014 were selected. Pre-registration pharmacists reviewed all discharge medication orders written by pharmacists on these days and identified discrepancies between the medication history, inpatient chart, patient records and discharge summary. A senior clinical pharmacist confirmed the presence of an error. Each error was assigned a potential clinical significance rating (based on the NCCMERP scale) by a physician and an

independent senior clinical pharmacist, working separately. *Main outcome measure* Incidence of errors in pharmacist-written discharge medication orders. *Results* 509 prescriptions, written by 51 pharmacists, containing 4258 discharge medication orders were assessed (8.4 orders per prescription). Ten prescriptions (2%), contained a total of ten erroneous orders (order error rate—0.2%). The pharmacist considered that one error had the potential to cause temporary harm (0.02% of all orders). The physician did not rate any of the errors with the potential to cause harm. *Conclusion* The incidence of errors in pharmacists' discharge medication orders was low. The quality, safety and policy implications of pharmacists routinely writing discharge medication orders should be further explored.

Keywords Hospital pharmacy · Medication · Medication errors · Medication safety · Patient discharge · Pharmacist · Prescribing · Quality · United Kingdom

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Impact on practice

- Pharmacists can safely write discharge medication orders as part of a routine clinical pharmacy service.
- Larger studies are needed to research the clinical significance of pharmacists' medication order errors.
- Pharmacists writing discharge medication orders may offer opportunities to improve the quality and safety of patient care transitions.

Introduction

Errors associated with hospital discharge prescriptions (To Take Aways, TTAs) are problematic and well documented in the UK [1–5]. For example, results from the EQUIP

34 of 141 patients (95%) were discharged with at least 2 weeks supply of their medication – either as a TTA supply, NPD supply, POD supply or sufficient supply at home. 1 of the remaining prescription items had “sufficient supply at home” but the patient had gone home by the time data were collected from the ward. Thus, it could not be confirmed if this was the case.

Of the 6 patients that did not have 2 weeks supply, two of the items were inhalers – a Salbutamol 100 mcg inhaler and a Clenil modulite 100 mcg inhaler, and two patients were short of 2 weeks supply by a few tablets (12 tamoxifen 20 mg tablets and 10 finasteride 5 mg tablets). Two patients reported they had 5–6 days supply and preferred to obtain more from the GP, whilst four patients reported waiting for the supply to be made from the hospital.

Documentation of changes to medication on discharge varied for each patient, and was carried out by the doctors as well as the clinical pharmacists. 79 of the 141 patients (56%) had discharge summaries with complete documentation of all changes made to medication. 32 patients (23%) had no documentation of the medication changes. 26 patients (18%) had documentation of their medication changes on the discharge summary, but only partially. For example, changes to doses of regular medication would be documented but new medication would not be clearly documented. 4 patients had no drug history recorded and so it was unclear whether there were any medication changes to be documented.

Documentation was carried out in parts by the discharging doctor and pharmacists across the bands. 100% of all discharge summaries for patients from the care of the elderly ward included documentation of all medication changes.

Discussion

It can be seen that both parameters – medication supply and discharge summary documentation – have area for improvement. 95%, rather than 100%, of patients were discharged with at least 2 weeks supply of medication. Of the 6 that did not have adequate supply, two involved supplies of inhalers. This may have been because it is quite difficult to tell how many doses are left in an inhaler. Two patients were short of 2 weeks supply of medication by a few tablets. These patients may have been admitted with 2 weeks worth of tablets, but their use of these tablets whilst an inpatient may not have been taken into consideration.

Two patients only had 5–6 days of tablets left in their own supply but would have rather collected it as supplies from the GP than wait for supplies from hospital. This may highlight the need to offer this option to patients that are keen to leave the hospital as soon as possible.

Just over half of the discharge summaries sampled had complete documentation of medication changes. The discipline of the person making the documentation varied for each patient. Further work is required to explore this further and to change this statistic to 100%.

Limitations: Data were collected from throughout the organisation, apart from the aforementioned exclusions. There were three individuals collecting data from the wards, which may have led to some variability. However, the same data collection tool was used, and training was provided to all the

individuals. Additionally, some patient groups were missed from the data collection because they were on high turnover wards, which may have limited the amount of data that could be collected. A maximum of three patients per ward was collected to ensure a range of data were collected rather than data for certain patient groups.

In conclusion, pharmacists have an important role to ensure medicines reconciliation and necessary documentation takes place at discharge as well on admission, and to ensure that patients have a suitable supply of medicines at point of discharge.

0083

Description and evaluation of the quality of pharmacist-written discharge medication lists

R. Onatade, S. Al-Azeib, S. Gore, S. Sawieres, L. Smith, A. Veck

King's College Hospital NHS Foundation Trust, London, UK

Focal points

- In this acute hospital, pharmacists are responsible for writing discharge medication lists (Pharmacist-written To Take Away Lists – PTTAs) for their patients.
- The aim of this large retrospective study was to assess two quality aspects of PTTAs – error rate and the documentation of information regarding medication changes during the inpatient stay.
- There were errors on 12/428 (2.8%) of PTTAs; 76% of eligible PTTAs were considered to contain fully comprehensive information on medication started or stopped with no essential or desirable details omitted.
- Pharmacists at this hospital safely and accurately write discharge medication lists to a high standard.

Introduction

Discharge notifications (DNs) are used to communicate the details of care provided to a patient during a hospital admission, including an accurate list of medicines. DNs are traditionally written by a doctor, but in this hospital, the preparation of the discharge medication list is a core clinical responsibility of the pharmacist looking after the patient. The pharmacist also ensures that information on medication changed, started and stopped is documented. PTTAs are currently not screened by a second pharmacist but should be checked by the doctor. Anecdotal evidence is that this does not happen routinely. 80% of all weekday discharge medication lists are PTTAs. This study aimed to assess a representative sample of PTTAs for safety (error rate) and quality of documentation.

Methods

This was a retrospective study. Data collection took place on single days during seven convenient, non-consecutive weeks

between October 2013 and January 2014. Stratified sampling (proportionate allocation) was used to ensure appropriate representation of all clinical specialties. The data collection tool was based on a previous similar study (Linda Dodds, personal communication, 2013), piloted by pre-registration pharmacists and pilot data validated by a senior clinical pharmacist. Pre-registration pharmacists collected final versions of PTTAs written a week before the data collection day and documented the specialty, the medicines from the drug history, inpatient chart and the PTTA. They noted any differences between the three lists and the documentation of such. Senior clinical pharmacists assessed the discrepancies between the lists to determine intentional and unintentional changes, and the quality of documentation. Ethics approval was not needed as this was a service evaluation. Data was entered into MS Excel for analysis.

Results

Four hundred twenty-eight PTTAs were reviewed. All could be assessed for errors. Errors were found for 12/428 patients. (2.8%, 95% CI 1.3%–4.3%). Sixty-nine PTTAs were not evaluated for documentation of changes. Fifty-four PTTAs from the Women's and Children's wards did not have this information available at the time of data collection. Fifteen patients had no changes to their medication. 272/359 (75.8%, 95% CI 71.5–81.3%) patients were discharged with all relevant information regarding medication changes documented in the DN.

The most serious error was in a surgical patient who was taking a high dose of oral morphine sulphate plus tramadol daily before discharge but was discharged without a strong opiate. Other errors included an incident of therapeutic duplication (antibiotics) and analgesics and anti-emetics missing from PTTAs despite being taken regularly just before discharge.

Discussion

Two point four per cent error rate on pharmacist-written discharge medication lists is remarkably low compared to the literature for traditional DNs. Additionally, 76% of DNs had complete information regarding medications initiated and stopped. Dodds showed that two-thirds of doctor-written discharge summaries were inaccurate prior to a pharmacy check.¹ Our PTTAs can be improved further as not providing information on medication changes to primary care and community colleagues can give rise to errors and adverse events after discharge. The low error rate demonstrates that pharmacist-written discharge medication lists are safe and of a high quality. Currently, instituting a second pharmacy check of PTTAs is not warranted.

Reference

1. Dodds LJ. Pharmacist contributions to ensuring safe and accurate transfer of written medicines-related discharge information: lessons from a collaborative audit and service evaluation involving 45 hospitals in England. *Eur J Hosp Pharm* Published Online First: 10 February 2014. doi:10.1136/ejpharm-2013-000418

0084

Hospital discharge summaries (HDS): do they need pharmacist input?

K. Medlinskiene

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Focal points

- HDS is the main communication tool between hospital and general practitioners.
- Evaluate turnaround time for HDS and to what extent pharmacist input was required.
- The average turnaround time for HDS in the pharmacy was 2 h 22 min and 75% of HDS required pharmacist input.

Introduction

The hospital discharge summary (HDS) is the main method of communicating patient's diagnostic findings, hospital management and arrangements for post-discharge follow up to general practitioners. HDS are additionally checked by hospital pharmacists if discharge medication supply is required. It is not unusual to receive complaints from patients about long waiting times for discharge medication. The study aimed to evaluate average time of a HDS journey and extent to which pharmacist input was required.

Methods

The data collection was performed during one week in November 2013 at one of three acute NHS Trust sites. All HDS received in the pharmacy had forms attached for time recordings (time a HDS was created, reached the pharmacy, turnaround time in the pharmacy). Data from HDS with completed time recordings was retrospectively analysed with Microsoft Excel to evaluate if pharmacist input was required. Any interventions, contributions and adjustments to HDS e.g. dose changes, additional instructions, completion of stopped medication box, completion of allergy status, were classed as pharmacist input. Ethical approval was not required.

Results

A total of 196 HDS had completed forms which represented 62% (314) of all HDS received that week by the pharmacy. The average time for one HDS to reach the pharmacy once it had been created was 1 h 4 min. Only 5% (10) HDS were in the pharmacy 24 h prior discharge as per trust policy.¹ The average turnaround time for a HDS was 2 h 22 min, which was considerably lower on the weekend (1 h 18 min). Each HDS was collected or delivered to the ward on average within 33 min. The overall average time of HDS journey was 3 h 59 min.

The majority of HDS, 75% (147), required pharmacist input. Pharmacist input was achieved by using information on inpatient drug cards, contacting ward (nurse or doctor), or both (Table 1).

Description and evaluation of the quality of pharmacist-written discharge medication lists

Raliat Onatade, Sumiah Al-Azeib, Shivani Gore, Sara Sawieres, Lindsay Smith and Alexandra Veck

Pharmacy Department, King's College Hospital NHS Foundation Trust, London

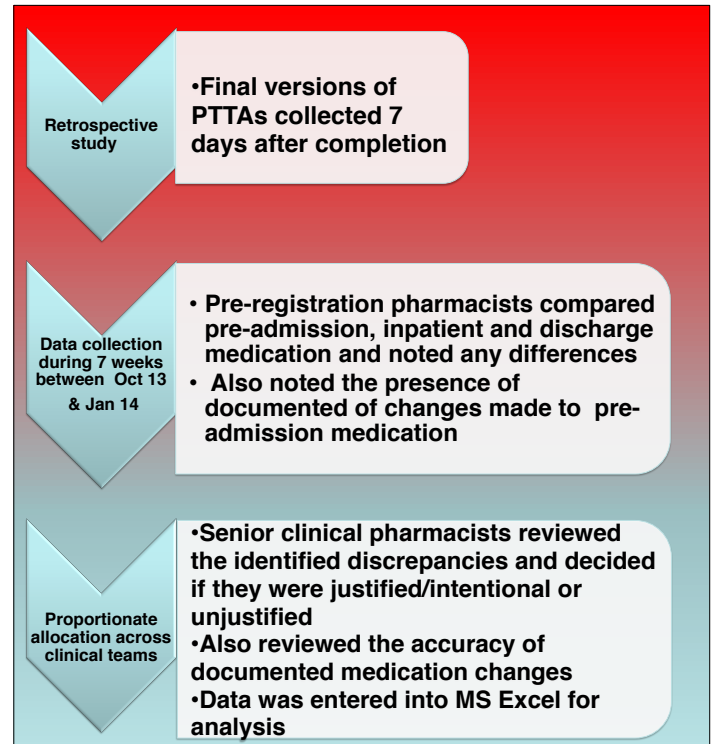
Introduction

- Discharge notifications (DNs) are traditionally written by a doctor and then checked by a pharmacist
- In our hospital, the preparation of the medication section of the DN is the responsibility of the clinical pharmacist looking after the patient
- This is an important service as discharge medication is available sooner and patients are discharged earlier
- The pharmacist also ensures that information on medication changes is documented on the DN
- 80% of weekday discharge prescriptions are written by pharmacists
- The medication section should be second-checked by the doctor who signs it off. This may not always happen
- We need to assure ourselves of the safety and quality of pharmacist-written discharge prescriptions (PTTAs)

Objectives

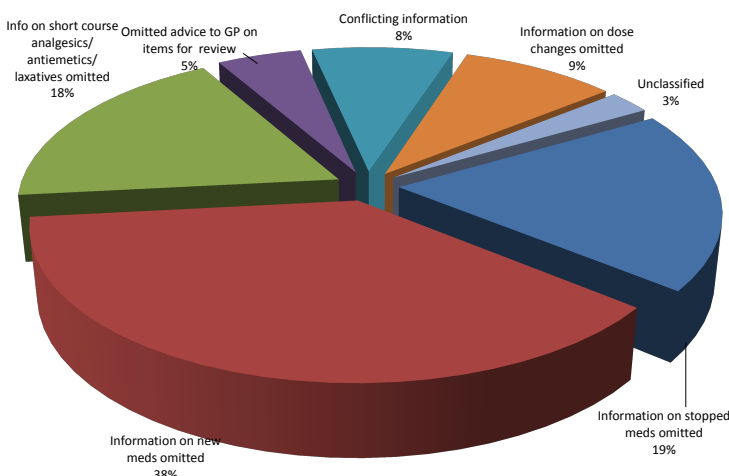
- To measure the PTTA error rate
- To evaluate the accuracy of information regarding medication changes as documented on PTTAs

Method



Results

- 509 PTTAs were reviewed
- Ten errors detected in 10/509 PTTAs
- Error rate = 1.96% (95% CI 0.8% – 3.2%)
 - 4 errors with moderate significance, 4 minor and 2 insignificant
 - 9 omissions, 1 duplicated therapy
- 119/509 (23.4%, 95% CI 19.3% to 26.7%) did not have medication changes accurately documented



Discussion

- 1.96% error rate with pharmacist-written discharge medication lists is remarkably low
- 23% of PTTAs had missing or conflicting information regarding medications initiated, changed or stopped. There is room for improvement here as this information is important to prevent errors and adverse events after discharge
- In comparison, Dodds showed that two-thirds of doctor-written discharge summaries were inaccurate prior to a pharmacy check¹
- Pharmacist-written discharge medication lists at this hospital are safe and of a high quality. Currently, instituting a second pharmacy check of PTTAs is not warranted

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awards

Napp Respiratory Award

Grainne d'Ancona
from Guys and St Thomas' NHS Foundation Trust for her



work on the development of a patient-held card to encourage safe and responsible prescribing of high dose inhaled corticosteroids. (Pictured above: Helen Marlow receiving the award from Napp's David Marsden)

Novartis Antimicrobial Award

Kieran Hand
from University Hospital Southampton NHS Foundation



Trust for his work on the design, development and multi-centre implementation of an app for hospital infection treatment guidelines and antimicrobial stewardship. (Pictured on right receiving the award from Adel Sheikh)

UKCPA Patient Safety Award, supported by Pfizer

Olga Crehan
from Northumbria NHS Foundation Trust for her work on the



prevalence of prescribing and prescribing errors by pharmacists. (Pictured above receiving the award from Pfizer's Howard Tebby)

UKCPA supports Best Medicines Optimisation in Secondary Care Award

As part of our ongoing strategy to support practitioners in developing their research skills, the UKCPA supported a Poster Award at the Pharmacy Management National Forum, held on 18 November 2014.

The 'Best Medicines Optimisation in Secondary Care' Poster Award marks excellence in the personal care offered to patients in a secondary care setting. The award was presented by Nina Barnett to **Raliat Onatade** for her poster on the description and evaluation of the quality of pharmacy-written discharge medication lists.

Congratulations Raliat!

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BMJ Open

Errors in discharge prescriptions –A comparison of prescriptions written by pharmacists and doctors

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2015-008347
Article Type:	Research
Date Submitted by the Author:	30-Mar-2015
Complete List of Authors:	Onatade, Raliat; King's College London, Institute of Pharmaceutical Sciences; King's Health Partners, Pharmaceutical Sciences Clinical Academic Group Sawieres, Sara; King's Health Partners, Pharmaceutical Sciences Clinical Academic Group; King's College Hospital NHS Foundation Trust, Pharmacy Department Veck, Alexandra; Western Sussex Hospitals NHS Foundation Trust, Pharmacy Department Smith, Lindsay; King's Health Partners, Pharmaceutical Sciences Clinical Academic Group; Guy's and St. Thomas's NHS Foundation Trust, Pharmacy Department Gore, Shivani; King's Health Partners, Pharmaceutical Sciences Clinical Academic Group; King's College Hospital NHS Foundation Trust, Pharmacy Department Al-Azeib, Sumiah; King's Health Partners, Pharmaceutical Sciences Clinical Academic Group; King's College Hospital NHS Foundation Trust, Pharmacy Department
Primary Subject Heading:	Health services research
Secondary Subject Heading:	Pharmacology and therapeutics
Keywords:	Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Clinical governance < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Risk management < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, INTERNAL MEDICINE, Adverse events < THERAPEUTICS

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Errors in discharge prescriptions – A comparison of prescriptions written by pharmacists and doctors

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Potential conflicts of interest: None

Funding: This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors

Keywords: prescribing; medication safety; quality; discharge; pharmacist; hospital; medication errors

For peer review only

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Abstract

Errors in discharge medication orders (to take aways, TTAs) are a problem.

Pharmacist validation often prevents errors from reaching the patient and studies where pharmacists write discharge medication orders instead of doctors have noted improvements in the quality and efficiency of discharge. There is limited information on whether pharmacists' orders contain fewer errors than doctors'. The aim of this study was to compare errors detected in doctor-written (DTTAs) and pharmacist-written (PTTAs) discharge medication orders.

Setting: Large teaching hospital in London, UK. Prior to 2012, paper drug charts were used and doctors typed TTAs on to an electronic system. Pharmacists then checked these for errors. From 2012, electronic prescribing was in place and pharmacists wrote 80% of the TTAs.

Method: Retrospective study. 2318 DTTAs (22,500 medications), written in May 2009, were assessed. Pharmacists' corrections and patient records were reviewed to identify prescribing errors corrected by pharmacists. Errors in 509 PTTAs (4258 medications) written between October 2013 and January 2014 were identified by looking for discrepancies between the medication history, inpatient chart, patient record and discharge summary. The potential clinical significance of a sample of errors was assessed.

Results: Errors were found in 32.1% of DTTAs and 2% of PTTAs (chi-square, $p < 0.0001$). 9.1% of doctors' discharge medication orders were erroneous, compared to 0.2% of pharmacists' orders (chi-square, $p < 0.0001$). The relative risk of a doctor-

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3 written discharge medication order having the potential to cause harm was 28.8
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5 (95% CI 4.0 - 205.5).
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8 Discussion and Conclusion: Pharmacists made significantly fewer errors than doctors
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10 in the ordering of discharge medication and these were of lesser clinical significance.
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12 The quality, safety and policy implications of pharmacists routinely writing discharge
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14 medication orders should be explored.
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21 **Strengths and limitations of this study**

- 22 • **The study was comprehensive in nature. The assessed prescriptions assessed were**
- 23 **written by a range of pharmacists and doctors, from all main acute care specialties.**
- 24
- 25 • **Prescriptions of similar complexity were compared**
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- 27 • **The doctors and pharmacists prescriptions were written at different times, and**
- 28 **study conditions were different**
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- 30 • **Non-random selection of prescriptions**
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Introduction

The problem of medication errors associated with hospital discharge prescriptions (To Take Aways, TTAs) is well documented[1–5]. For example, the EQUIP study detected errors in 6.4% TTAs[1] and Franklin and colleagues found that 9% of TTAs from medical admissions and surgical wards included an error[3]. Seden et al reported that 34.5% of TTAs contained at least one prescribing error[4], and in a study of prescribing errors in mental health hospitals, 6.5% of discharge prescriptions were associated with an error[5].

Pharmacists are often cited as an essential defence in preventing prescribing mistakes reaching the patient[1,3,5–7] by detecting and correcting errors at the dispensing stage. Allowing pharmacists to write discharge medication orders instead of doctors has occurred in some hospitals, with noted improvements in quality and efficiency[8–11]. However, there is limited information on whether or not pharmacists commit fewer, or different, prescribing errors. The aim of this study was to compare errors detected in doctor-written (DTTAs) and pharmacist-written (PTTAs) discharge medication orders.

Method

The study was undertaken in a large teaching hospital in London, UK. Up until 2012, almost all TTAs were written by doctors. These required validation by pharmacists before dispensing. From 2012, pharmacists began to write the majority of discharge medication orders. By 2013, 80% of weekday discharge prescriptions were PTTAs. Doctors were asked to check each PTTA before issuing and signing the full discharge summary (a larger document including treatment details alongside the TTA). Before 2012, paper drug charts were used and discharge medication orders were typed onto an electronic system. By the end of 2012, electronic prescribing and medication administration (EPMA) had been implemented across the hospital and so all TTAs were then written electronically.

Ethics approval was not required as the study constituted service evaluation.

The DTTA sample consisted of all validated DTTAs dispensed in pharmacy in May 2009. Data were collected from pharmacy and hospital patient records. Printed and electronic versions of the DTTAs were retrospectively examined for pharmacists' changes and corrections. The electronic patient record (EPR) was used to confirm if the pharmacist's intervention was to correct an error.

A statistical power analysis was performed for PTTA sample size estimation. This determined that 500 PTTAs would be sufficient to observe an error rate similar to

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3 that found in DTTAs, (with a 95% Confidence Interval of +/- 4) and that this sample
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5 size would have greater than 95% power of detecting a 50% reduction in errors
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7 compared to DTTAs. Stratified sampling was then applied to ensure sufficient
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9 representation of each major clinical specialty. On convenient days between October
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11 2013 and January 2014, researchers (AV, LS and SG) reviewed all PTTAs dispensed by
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13 pharmacy exactly one week earlier. Four sources were used to detect errors;
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15 medication history, the electronic inpatient drug chart and the printed and electronic
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17 versions of the TTA. If discrepancies were identified, a senior clinical pharmacist (SS
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19 or AS) reviewed the EPR and used clinical judgment to decide if an error had
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21 occurred. Where necessary, the pharmacist who wrote the TTA was asked to clarify
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23 the discrepancy. If an error was identified, appropriate remedial action was taken.
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25 Exclusions were PTTAs written by pharmacists being trained to write TTAs, and any
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27 for which all four documents could not be located.
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39 Errors were categorised according to the type of prescription error, derived from
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41 those used in similar studies[1,12,13]. A sample of DTTA errors and all PTTA errors
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43 were also rated for their potential clinical impact. A senior physician and senior
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45 clinical pharmacist (not otherwise associated with the study) independently rated the
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47 severity of a random sample of DTTA errors and all PTTA errors, using a validated
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49 adaptation of the National Coordinating Council for Medication Error Prevention
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51 (NCCMERP) index[14] and descriptors for potential harm[15]. One change was made
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53 to the adapted index. Instead of collapsing the nine original categories into six, the
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3 decision was made to use seven categories, i.e errors which could have caused
4 temporary harm were separated from errors which may have required intervention to
5 sustain life. Unlike the authors of the adapted index, these researchers considered
6 temporary harm and life-threatening harm to be sufficiently distinct to require
7 separation. The physician and pharmacist were blinded to which profession made the
8 errors. The error category descriptors are shown below.
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21 A: Circumstances or events that have the capacity to cause error

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23 B: The error could not have reached the patient. For example, it would have been
24 impossible to implement the prescription without further clarification. (An "error of
25 omission" does reach the patient)
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31 C: The error would not cause patient harm OR the error would have required
32 monitoring or intervention to confirm that it resulted in no harm
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36 D: The error would likely have resulted in temporary harm to the patient and would
37 have required intervention, initial hospitalization or prolonged hospitalisation
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41 E: The error would have resulted in permanent patient harm
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44 F: The error would have required intervention necessary to sustain life
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47 G: The error could have resulted in the patient's death
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49 U: Unable to classify with the information provided
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54 Errors classified as D, E, F or G were considered potentially harmful.
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Data were organised with Microsoft Excel 2011. Statistical analysis was performed using IBM SPSS for Macintosh, Version 21. Chi-square tests were used to compare the proportions of TTAs and medication orders with errors.

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Results

In total, 2318 DTTAs were written in May 2009, containing a total of 22,500 "items" or medications. Errors were found in 743 DTTAs (32.1%, 95% Confidence Interval (CI) 30.3% – 33.9%). These contained 7554 prescribed items, of which 2052 were erroneous (total errors = 2057). This gave a prescribed item error rate of 9.1% (95% CI 8.6% – 9.6%), with 0.9 erroneous orders per patient and 2.8 incorrect orders per TTA with an error.

509 PTTAs, with a total of 4258 items, written on selected days during the months of October, November and December 2013, and January 2014, were assessed. Overall, 10 errors in 10 PTTAs were detected, giving a 2% (95% CI 0.8% – 3.2%) PTTA error rate. The prescribed item error rate was 0.2% (95% CI 0.1% - 0.3%).

The difference in the number of TTAs with at least one error was statistically significant, as determined by chi-square test ($X^2 = 193.4$, $p < 0.0001$). The difference in the prescribed items error rate was also statistically significant ($X^2 = 397.4$, $p < 0.0001$).

In a sub-sample, 203 DTTA errors (9.9% of errors) were rated for potential severity. The physician considered that 15 of these errors (7.4%) could have potentially led to patient harm, of which two (1%) could have caused permanent harm. The clinical pharmacist considered that 36 of the errors (17.7%) had the potential to cause harm,

of which two (1%) could have caused permanent harm. Using the pharmacist's more conservative ratings, 0.7% of doctors' discharge medication orders had the potential to cause harm.

The physician rated none of the PTTA errors as potentially causing harm. The pharmacist rated one error with the potential to cause temporary harm. This was an omission of a diabetic patient's regular anti-hypoglycaemic medication from the prescription. The patient had been using these before admission. This equated to 0.02% of pharmacist orders potentially causing harm.

The relative risk of doctors making an error in a discharge medication order compared with pharmacists was 38.8 (95% CI 20.8 – 72.2). Using the physician's ratings for the DTTAs (fewer errors with harm potential), the relative risk of a doctor's discharge medication order containing an error with the potential to cause harm was 28.8 (95% CI 4.0 - 205.5).

Table Frequency of type of error

<p>Doctor-written TTAs (%)</p> <p>n = 2057 errors in 22,500 items</p>	<p>Pharmacist-written TTAs (%)</p> <p>n = 10 errors in 4,258 items</p>
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Drug omitted	560 (27.2%)	Drug omitted	7 (70%)
Incorrect dose or frequency	392 (19%)	Duplicated drug	2 (20%)
Prescribed drug not required	291 (14.1%)	Prescribed drug not required	1 (10%)
Duplicated drug	180 (8.8%)		
Incorrect formulation	176 (8.6%)		
Incorrect or missing duration	166 (8.1%)		
Incorrect time of day	74 (3.6%)		
Incorrect drug (replaced with correct drug)	60 (2.9%)		
Incorrect route	7 (0.3%)		
Other (e.g. missing or wrong day of the week, monitoring errors and unclear or missing instructions likely to lead to administration errors)	151 (7.3%)		

Discussion

The relative risk of doctors making an error in a discharge medication order was nearly forty times that of the pharmacists. The independent, blinded rating of error severity demonstrated that the pharmacists' errors were of lesser severity than the doctors'; the relative risk of a doctor's discharge medication order containing an error with the potential to cause harm was nearly thirty times that of the pharmacists'. The main reason for the difference between the raters was that the pharmacist rated most of the duplicated orders as potentially causing harm, while the physician thought that no duplicated orders had the potential to cause harm. As discharge medications have to be dispensed, duplicated discharge medication orders will not put a patient at risk of receiving the same drug twice.

This is the first study to compare errors in doctors' and pharmacists' medication orders. We found a very small error rate in pharmacists' orders, 0.2% compared to 9.1% for doctors. Studies of errors in pharmacists' medication orders have not been widely reported. Baqir et al found an error rate of 0.3% in 1,415 pharmacist-prescribed medication orders for hospital inpatients[16]. A short audit on two surgical wards in a UK hospital found that DTTAs required ten times the number of interventions of PTTAs[10]. Our doctors' error rate is comparable to that found in recent UK studies which used a similar methodology[1,4,5,13]. However, there is currently no equivalent information on pharmacists' discharge prescriptions with which to compare our results.

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6 The comprehensive nature of this study is a significant strength. Unlike other work,
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8 we compared prescriptions written by a wide range of doctors and pharmacists,
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10 working in all major clinical specialties. Therefore real-world generalisation is
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12 possible. Additionally, our method ensured that we compared prescriptions of similar
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14 complexity. This study has also added to the emerging evidence regarding the safety
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16 of pharmacist prescribing[16].
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23 There are some limitations to this work. DTTAs were written before EPMA was
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25 introduced, while the PTTAs examined were all written after implementation of
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27 EPMA. Thus study conditions were different. The reduction in errors is unlikely to be
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29 due to EPMA – from our (pharmacy's) routine monitoring of pharmacy interventions
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31 we know the errors identified in the 2009 DTTAs still occur. The evidence on whether
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33 electronic prescribing systems reduce errors is inconsistent and no studies have
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35 shown a reduction in errors of the magnitude seen in this study[17–21]. Secondly,
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37 workflow constraints meant that it was not possible to check the PTTAs immediately
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39 after they were written. This reduced any potential Hawthorne effect, but corrections
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41 made by doctors and dispensary staff will not have been detected. However, one
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43 reason for conducting the study was because of pharmacists' concerns that doctors
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45 were not checking the PTTAs before authorising them. Additionally, our method for
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47 identifying errors in PTTAs matched the process pharmacists use when checking
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3 DTTAs. Therefore it is not likely that there were sufficient undetected errors to have
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6 had a significant effect on the outcome.
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11 In this study, pharmacists had a prescribing error rate substantially lower than that of
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13 doctors. The pharmacists' errors were also of significantly lesser severity. There are
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15 well-known safety and quality issues with traditional doctor-written discharge
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17 prescriptions, therefore the policy implications of our findings are important. Further
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19 studies are needed, including comparing error rates with other non-medical
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21 prescribers, and in other settings, in order to explore this new role for pharmacists in
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23 improving the quality and safety of care transitions.
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29 **Authors' contributions**

30 RO conceived the study, analysed data, provided overall supervision and drafted the
31
32 original manuscript. SS, AV, LS, SG and SA contributed to the study design, collected
33
34 and analysed data. SS and SA supervised data collection. All authors contributed to
35
36 the manuscript and approved the final version.

37 **Acknowledgements**

38 Reena Mehta and Dr. Jonathan Potts assigned clinical impact ratings to the errors.
39
40 Professor David Taylor commented on and edited the manuscript.
41
42

43 **Potential conflicts of interest/competing interests: All authors declare no** 44 **competing interests**

45 **Funding: This research received no specific grant from any funding agency in** 46 **the public, commercial or not-for-profit sectors**

47 **Data Sharing Statement: No additional data is available**

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PW31

Economic value of pharmacy-led medicines

reconciliation at admission to hospital:

an observational, UK-based study

Raliat Onatade, Samantha Quaye

Economic value of pharmacy-led medicines reconciliation at admission to hospital: an observational, UK-based study

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Received 3 August 2016

Revised 12 November 2016

Accepted 16 November 2016

EAHP Statement 4: Clinical Pharmacy Services.
EAHP Statement 5: Patient Safety and Quality Assurance

ABSTRACT

Objective To describe the cost–benefits of pharmacy-led medicines reconciliation (MR) on admission by applying a theoretical model (University of Sheffield School of Health and Related Research—SCHARR model) to real-world data.

Methods This was a retrospective, single-centre study.

Setting 1000-bedded teaching hospital in London, UK. Clinical pharmacy contributions related to unintended medication discrepancies (averted preventable adverse drug events, pADEs), documented by pharmacy staff on prearranged days during 2012, were assessed for clinical significance by a panel of senior clinical pharmacists using the SCHARR model. Costs avoided were allocated according to the SCHARR model. Pharmacy staff carrying out admission MR were timed. Net cost avoidance was calculated by subtracting cost of time taken to carry out MR from the costs avoided by averting pADEs. Sensitivity analyses were carried out.

Results 118 pADEs averted as a result of MR were recorded over the 6 reporting days. 116 were rated for clinical significance. Gross costs avoided were £36 135–£75 249 (€44 446–€92 556). The admission MR process was timed for 48 patients. The mean time to complete MR for one patient was 14 min (range 1–40 min). The cost of carrying out one MR, based on the cost of employing a first-level post-foundation clinical pharmacist was £7.56 (€9.30). The net benefit of one MR was £34–£80 (€42–€98). The benefit:cost ratio was 5.53:1–11.51:1.

Conclusions Pharmacy-led MR on admission has significant economic, as well as clinical benefits. Further work is required for full economic evaluations of MR.

INTRODUCTION

Medication discrepancies and errors often occur during transitions of care and are known to account for a significant proportion of potential and actual adverse drug events (ADEs).^{1–4} Prescribing errors on admission to hospital are high⁵ and if uncorrected can lead to significant morbidity.⁶ Medicines reconciliation (MR), a process for identifying and correcting unintended medication discrepancies as patients move between care settings is an internationally endorsed and recommended safety strategy.^{7–9} In the UK, the National Institute for Health and Care Excellence (NICE) has described the aim of MR on admission as ‘to ensure that medicines prescribed on admission correspond to those that the patient was taking before admission.’⁹

Most studies have focused on reductions in unintended medication discrepancies as an outcome of MR;^{4 10} however, there is evidence that MR can reduce preventable adverse drug events (pADEs)¹¹ and posthospital healthcare utilisation.¹²

The involvement of pharmacists in MR on admission is well documented in the literature.^{4 13–15} Bond *et al*¹⁶ evidenced a link between clinical pharmacy-led medication history-taking on admission and lower hospital mortality rates. A study of the Swedish Lund Integrated Medicines Management Model¹⁷ found that 36% of clinical pharmacists’ recommendations related to admission medication reconciliation. Ninety-two per cent of the pharmacists’ recommendations were judged to have some clinical significance, and 10% were very significant. Other researchers have found process benefits.^{13 18 19}

MR is a complex and resource-intensive activity.^{20–23} This may be a barrier to implementation.^{21 23} Pevnick *et al*²³ in their article on the problem with MR describe the high cost of pharmacist interventions, the lack of clear cost–benefit data of MR and the resulting reluctance of institutions to invest in pharmacy staff to lead MR programmes. However, few studies have looked at costs and resource use of MR at hospital admission. A study from the Netherlands compared the labour costs of hospital pharmacy staff preventing errors through MR with medication costs after discharge.²⁴ At 6 months postdischarge, the savings in medication costs outweighed staff costs. A systematic review of effects and costs of pharmacy-led MR²² could not come to a definite conclusion on the effects and costs. Both studies combined admission and discharge MR.

In the UK, the case for the cost-effectiveness of pharmacist-led MR at admission was based on economic modelling work by Karnon and colleagues, researchers at the School of Health and Related Research (SCHARR), University of Sheffield, UK.^{14 25} Literature-based values of the costs of medication errors were compared with the modelled benefits of different MR interventions or systems to determine the most cost-effective system for avoiding pADEs. The output was the economic model which led to NICE adopting pharmacy-led admission MR as the most cost-effective and clinically effective model of performing MR in the UK National Health Service.⁹ Table 1 shows the modelled costs of pADEs. For pharmacy-led MR, Campbell *et al*¹⁴ allocated a cost of £10.28 (95% CI 5.58 to 21.39) or €15.00 per inpatient admission. To the best of our knowledge, there are no

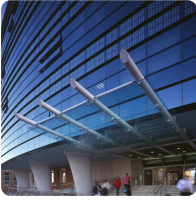

To cite: Onatade R, Quaye S. *Eur J Hosp Pharm* Published Online First: [please include Day Month Year] doi:10.1136/ejhp-2016-001071

King's College Hospital NHS Foundation Trust

An Analysis of the Economic Impact of Medicines Reconciliation

Samantha Quaye, Raliat Onatade, Charlotte Bell, Kirsty Chambers, Aisling Considine, Sinead Tynan and Patricia Yerbury


CPMU Research Evening Symposium Thursday 26th March 2015



KING'S HEALTH PARTNERS
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Question

Is pharmacy-led medicines reconciliation cost effective?



Background

- NICE guidance on medicines reconciliation published in 2007
- Case for cost-effectiveness of pharmacist-led medicines reconciliation based on modelling work by Karnon et al
- We wanted to test the theory in practice

Methodology

- Tried to follow relevant guidance in Consolidated Health Economic Evaluation Reporting Standards (CHEERS)¹
- Costs incurred vs costs avoided
 - A: Cost of time to complete medicines reconciliation
 - B: Cost avoidance value from recorded medication reconciliation interventions
- Analysis – Basic principle - Subtract A from B = cost avoided
- Sensitivity analyses – different values of 'A'

¹Husereau et al. BMC Medicine 2013

King's CHEERS

- Target population : Patients admitted to KCH, requiring medicines reconciliation
- Study perspective : Health-system only
- Time horizon : 2012
- Discounting : All costs updated to 2012. Staff costs based on 80% capacity
- Outcome/measures of benefits : Avoided ADEs

King's Timing medicines reconciliation activities

- 6 pharmacists & 5 MMPTs were shadowed and timed
- 46 patients
- Calculated time required for medicines reconciliation activities
- Averaged results

King's Rating interventions

- All interventions/contributions reported in 2012 (12 reporting days = 6 days of whole hospital data)
- Panel of five rated the potential clinical impact
- Consensus = at least 4/5 agreed
- No consensus - referred for independent decision
- Avoided cost applied to each intervention

King's Costs avoided by preventing ADEs at admission

Potential clinical significance		Costs avoided
1	Detected medication error (Following the occurrence of an error, the error had been identified before reaching the patient).	1 £0 - £6
2	Significant (non-increased length of stay) pADEs - error results in temporary harm to the patient and requires intervention.	2 £65 - £150
3	Serious pADEs – error results in temporary harm to the patient and requires initial or increased length of stay.	3 £713 - £1484
4	Severe, life threatening, or fatal pADEs – error results in permanent patient harm, intervention is vital to sustain life, or makes a contribution towards a patient's death.	4 £1085 - £2120

Results

- 118 contributions relating to MR on admission during 2012
- **105** achieved consensus
- 13 needed independent decision (6 non-consensus / 7 required more info)
- **11/13** rated by independent adjudicator (2/13 – unable to be rated)
- **116** interventions rated

Results

Time taken to conduct MR: 1 minute (min) – 40 minutes (max)

Time taken (minutes) to complete a drug history	Time taken (minutes) to resolve discrepancies	Time taken to complete medicines reconciliation
Mean (SD) 6.2 (6.4)	Mean (SD) 7.8 (7.8)	Mean (SD) 14.0 (10.4)
Median (IQR) 5.1 (1.5 – 7.5)	Median (IQR) 6.3 (1.4 – 8.4)	Median (IQR) 11.7 (5.9 – 18.7)

*Karnon et al. Model-based cost-effectiveness analysis of interventions aimed at preventing medication error at hospital admission (medicines reconciliation). Journal of Evaluation in Clinical Practice 2009

Results

Clinical significance level	No. of interventions	Total cost avoidance £(min)	Total cost avoidance £ (max)
1	36	0	254
2	44	3,360	7,753
3	30	25,128	52,299
4	6	7,648	14,943
Total	116	36,135	75,249

Results

Inputs:

- Median time to conduct one MR: 11.7 minutes
- Cost of B7 time per minute = £0.34
- Therefore cost of one MR = £3.98
- Total cost for 116 interventions assessed in study: £461.68

Benefits:

Costs avoided: £36,135 - £75,249

**Net cost avoidance for 116 med rec interventions :
£35,673.32 - £74,787.32**

King's

- Total number of MR activities over 6 full days = 864

B7 cost for all MR activities over 6 days = £3,525

Net costs avoided for all MR activities over 6 days (costs avoided – staff costs) = £32,610 - £71,724

King's

Sensitivity Analyses

Three substitute scenarios for 116 MR interventions

- B5 MMPT instead of B7
 - Net cost avoidance = £35809.27 - £74923.27
- All interventions are of minimal clinical significance (£0 - £6 avoided for each)
 - Net cost avoidance = £234.32
- All interventions have minimum clinical significance AND maximum time (40mins) required to complete all
 - Net cost avoidance = - £1577 - £881.60

King's

Discussion

Costs avoided for 116 MR interventions = £35,673.32 - £74,787.32

Costs avoided for 6 days of MR activities = £32,610 - £71,724

Benefits not robust to extreme inputs


Limitations:

- All pharmacist panel
- B7 salary, no additional costs taken into account
- Self reporting of interventions
- Timings did not include critical care areas


King's

Conclusion

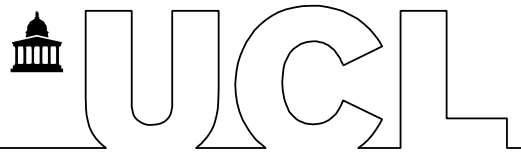
Is pharmacy-led medicines reconciliation cost effective?



King's Questions



Email: Samantha.Quaye@nhs.net



**Analysis of the clinical and economic impact of medicines
reconciliation**

Hemal Patel

May 2013

*This research project is submitted in part fulfilment of the requirements
for the Master in Pharmacy degree,*

University of London

Department of Pharmacy Practice, School of Pharmacy,

University of London

100% Hospital-based

Acknowledgements

I would like to thank my project supervisor, Raliat Onatade, and co-supervisor, Samantha Quaye, at King's College Hospital for their constant guidance and support throughout this project.

I would also like to express gratitude towards my supervisor at the UCL School of Pharmacy, Professor Felicity Smith, whose help and feedback over the last few months has been invaluable.

Finally, I would like to thank my family and colleagues for their continued support and help throughout the duration of this project.

Thank you all for your help, without you this project would not have been possible.

Abstract

Introduction: Medication errors can lead to preventable adverse drug events. These pose a risk of harm to hospital inpatients and the burden of these on the NHS in terms of cost is high. Errors occur commonly at admission but can be avoided or rectified by interventions made during the medicines reconciliation process. The aim of this process is to make sure that the medicines prescribed on admission correspond to those that the patient was taking prior to admission.

Method: Fifty medicines reconciliation related contributions were selected at random. The forty-six contributions (four of the fifty contributions were excluded as they were considered not to be errors) were analysed by a clinical pharmacist and were rated according to their clinical significance. Once the contributions were assigned a clinical significance rating, a value for cost avoidance was given and the total true cost savings of the forty six contributions to the NHS were determined.

Results: 17 of the 46 (37%) contributions were found to be detected medication errors (or no harm or intervention required), 23 (50%) were found to be significant preventable adverse drug events, 6 (13%) were found to be serious preventable drug events. None of the forty –six contributions that were selected and analysed were found to be severe, life threatening or fatal preventable adverse drug events.

The forty-six contributions were found to have a total range of true cost savings to the NHS of £5,518 to £12,189 and the average total range of true cost savings per contribution amongst all specialities was £120 to £265 (to the nearest pound).

Conclusion: The process of medicines reconciliation has both a positive clinical and economic impact due to the prevention and rectification of medication errors.

PW32

Improving the pharmaceutical care of patients on
psychotropic medication admitted to an acute hospital
- the impact of a proactive 'inreach' specialist
psychiatric pharmacist service

R. Onatade, O. Oduniyi

Awards and Poster Presentations

UKCPA Awards (Poster) Section

The following paper won an award during 2016

<p>UKCPA Patient Safety Award 2016, supported by Pfizer Improving the pharmaceutical care of patients on psychotropic medication admitted to an acute hospital – the impact of a proactive ‘inreach’ specialist psychiatric pharmacist service Raliat Onatade, King’s College Hospital NHS Foundation Trust, Oluwakemi Oduniyi, South London and the Maudsley NHS Foundation Trust</p>
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UKCPA/PRUK Clinical Research Grant (Poster) Section

The following papers successfully secured UKCPA/PRUK research funding

<p>2014 Use of unlicensed medicines within primary and secondary care settings: A qualitative study Gemma Donovan¹, Lindsay Parkin¹, Lyn Brierley-Jones², Scott Wilkes¹. 1. University of Sunderland, 2. Teesside University, Middlesbrough</p>
<p>2015 Pharmacy TECHnician supported MEDicines administration (TECHMED) in hospitals: understanding implementation and delivery Elizabeth Seston*, Darren Ashcroft*, Evangelos Kontopantelis, * Liz Lamerton,† Lindsay Harper† Fiona Morris,† Ailsa Burgess,† Faith Mann, * Richard Keers*, *Manchester Pharmacy School, University of Manchester, † Salford Royal Hospital NHS Foundation Trust</p>

Poster
 Number Title and lead presenter

Poster Presentations

1	<p>The level of compliance with medication reconciliation on discharge for paediatric patients at Chelsea and Westminster Hospital Hani Addada & Maria Moss, Chelsea and Westminster Hospital, London</p>
2	<p>Audit of the management of delirium in three adult intensive care units (ICUs) Fozia Ahmad & Reena Mehta, King’s College Hospital NHS Foundation Trust, London</p>
3	<p>Improved patient outcomes with dedicated ‘Enhanced Recovery’ Pharmacist review of surgical patients Neetu Bansal, Central Manchester University Hospitals NHS Trust</p>
4	<p>Analysis of the medicines most frequently involved in pharmacist interventions Basi T, Miller G, Lewisham and Greenwich NHS Trust</p>
5	<p>Improving the quality of prescribing and administration records of oxygen Toby Capstick, Leeds Teaching Hospitals NHS Trust</p>
6	<p>Using electronic prescribing and administration to reduce the risks with intravenous magnesium sulphate Gillian Cavell, Caroline Anderson, King’s College Hospital NHS Foundation Trust. London</p>
7	<p>Reducing the risk of inpatient iatrogenic hypoglycaemia in hyperkalaemia treatment using e-prescribing and a multidisciplinary approach Omar Mustafa, Danielle Dixon, Alison Cox, Emma Goble, Alice Burrige, Ben Fidler, Charlotte Bell, Gillian Cavell, Insulin Safety Group, King’s College Hospital NHS Foundation Trust, London</p>
8	<p>24/7 Medication Collection, Zero Wait Time: NEW Prescription In Locker Box (PILBOX) Service Vivian Chee, Christina Lim, Fei Ling Lo, Boon Kwang Goh, SingHealth Polyclinics (SHP)</p>
9	<p>DDIs & DAAs: Pharmacist-led management of drug interactions in a Hepatitis C clinic Miriam Coghlan, and Gail Melanophy, Dr. Aisling O’Leary, Prof. Colm Bergin, Prof. Suzanne Norris, St. James’s Hospital, Dublin 8</p>
10	<p>Audit of Countess of Chester Hospital NHS Foundation Trust IV Vancomycin Guidelines Michael Cooper, Ceri Davies, David Breen, Countess of Chester NHS Foundation Trust</p>
11	<p>Analgesic use in liver impairment – a consensus study Robbie Cord ¹, Yvonne Semple ¹, Ewan Forrest ², Scott Cunningham.³, ¹NHS Greater Glasgow & Clyde, Glasgow, ²Glasgow Royal Infirmary, ³Robert Gordon University, Aberdeen</p>
12	<p>A Retrospective Review of the Complexity of On-call Enquiries <i>Withdrawn</i></p>
13	<p>Assessment of blood glucose monitoring in hospitalised patients with diabetes Devaney L. McFarlane F. Wirral University Teaching Hospital NHS Foundation Trust</p>
14	<p>Audit of pharmacist documentation in medical notes Sara Dhanji; Snehal Shah, Royal Brompton and Harefield NHS Foundation Trust, London</p>
15	<p>Evaluation of Prescribing Pharmacists in Theatres: Improving Medicines Reconciliation for Elective Surgical Patients Solanki S, Dhillon K, Northampton General Hospital</p>
16	<p>Antimicrobial Stewardship Audit 2016: De-escalation of intravenous antibiotics Young T. Doherty S., Wirral University Teaching Hospital</p>
17	<p>Evaluation of Pharmacist Intervention on Patients Admitted via a Surgical Admissions Lounge (SAL) Sarah Morris and Alan Field, †Salford Royal NHS Foundation Trust</p>

UKCPA Patient Safety Award 2016, supported by Pfizer
Improving the pharmaceutical care of patients on psychotropic medication admitted to an acute hospital – the impact of a proactive 'inreach' specialist psychiatric pharmacist service

Raliat Onatade, Pharmacy Department, King's College Hospital NHS Foundation Trust
 Oluwakemi Oduniyi, Pharmacy Department, South London and the Maudsley NHS Foundation Trust

Background

King's College Hospital (KCH) is a 1000-bedded acute hospital in South London. All wards receive a comprehensive clinical pharmacy service, with pharmacists available to wards all day. Patients with severe mental illness (SMI) admitted to the hospital may be referred to the Psychiatric Liaison Team (PLT) for advice on management of mental health problems and medication. It was believed that despite the availability of the PLT, patients on psychotropic medications still had unmet pharmaceutical needs. Patients with SMI and disabilities have a higher risk of poor physical health and premature mortality than the general population but also often do not engage well with primary care services. Therefore ensuring adequate physical health monitoring can be challenging¹. In 2015, the pharmacy department agreed to lead on a Local Incentive Scheme (LIS) to improve the pharmaceutical care and physical health monitoring of patients who were not seen by the PLT. A collaboration was agreed between KCH and South London and the Maudsley Mental Health Trust (SLAM) for a specialist psychiatric pharmacist (PP), employed by SLAM, to provide an inreach proactive consultation service to KCH. This report describes the safety impact of the first five months of this service.

Objectives

The main objectives of the specialist pharmacist are to:

- Work closely with clinical pharmacists to carry out medication reviews
- Improve the uptake of physical health monitoring of patients
- Improve communication of medication review outcomes to GPs on discharge
- To share and sustain learning with the pharmacists and doctors

Method

Inclusion criteria for eligible patients were agreed. A daily electronic report of patients who met the criteria was developed. The PP downloads the patient list daily, and uses the electronic patient record and drug chart to identify patients to review. Other pharmacists also contact the PP about patients for whom they have queries. The PP then goes to the wards to see the patients and discuss any required actions with pharmacists, doctors and nurses. Details of clinical contributions are recorded. The PP works 1 day at work back at base to maintain her specialist knowledge. Two senior experienced psychiatric pharmacists (not involved in the service) used an adaptation of the National Patient Safety Agency risk matrix² to assess the clinical significance of the PP's input to each patient. Ethics approval was not required.

Results

Between December 2015 and April 2016, 200 patients were reviewed (205 patient encounters as 2 patients on clozapine were admitted and reviewed more than once). 124/200 (62%) required input from the specialist pharmacist. 50/124 (40.3%) patients had recommendations made to their GPs. 313 clinical contributions were made (2.5 per patient).

48% (151/313) related to physical health monitoring, 44% of which (66/151) were implemented during the patient's stay. 32% (99/313) were drug related problems (DRPs), 31% of which (31/99) led to a change in therapy. 20% (63/313) involved providing education or information. Table 1 shows details of the DRPs.

Table 1. Drug-related problems and risk ratings

Drug-related problems (n = 99)		Clinical risk rating per patient (n = 124)	
Drug interaction	18 (18%)	Low risk	47 (38%)
Therapeutic drug monitoring	14 (14%)	Moderate risk	38 (30.7%)
Prescribed dose too high	13 (13%)	High risk*	32 (26%)
Preventative therapy	11 (11%)	Extreme risk*	7 (5.6%)
Drug selection problem	8 (8%)	*Drugs involved	
Drug supply	7 (7%)	High risk: citalopram = 16/32, clozapine = 7/32, other drugs = 9/32	
Adverse event	4 (4%)	Extreme risk: citalopram/escitalopram = 6/7, clozapine = 1/7	
Contraindication	4 (4%)		
Other	20 (20%)		

5% (19/200) patients were on clozapine, 14/19 (74%) of whom required input. 12% (39/313) of all contributions involved clozapine (2.8 contributions per patient). 53.5% (107/200) patients were on selective serotonin reuptake inhibitors (SSRIs), 31/107 (29%) of whom required input. 19% (10/313) of all contributions involved SSRIs (1.8 per patient). Chart 2 shows the risk ratings allocated to the clinical contributions. Considering the whole population of 200 patients, the relative risk of a patient on clozapine being at high or extreme risk without input was 2.46 (95% CI 1.33 to 4.56, p = 0.02). Of the patients on SSRIs who required input, 71% (22/31) were also at high or extreme risk, compared to 18% of patients on non-SSRIs (Chi-square = 41.4, p < 0.0001).

The PP has also delivered teaching sessions for pharmacists and junior doctors, developed a psychotropic medication review checklist for pharmacists, guidance on psychotropic drugs for new doctors and an aide-memoir for doctors and pharmacists on how to appropriately communicate psychotropic medication changes to GPs.

Discussion

A proactive, specialist pharmacist inreach consultation service has significantly improved the care of patients taking psychotropic medicines in an acute hospital. The use of technology enabled effective identification of patients. Nearly one-third of this vulnerable group of patients seen were at high or extreme risk without the specialist pharmacist's input. Due to a lack of specialist knowledge regarding psychotropic drugs, and the PLT's referral model, some DRPs were not being detected. Patients taking clozapine in particular are at high risk from DRPs. Additionally, a large proportion of patients on SSRIs who required input were at high or extreme risk. The proactive nature of the service has also ensured that many patients received their essential physical health monitoring. This care model demonstrates that where expert clinical knowledge is lacking, proactive review by a specialist is essential to ensure appropriate care. This also enables continuous upskilling of staff. Due to its success, funding for the service has been continued. This model is appropriate for other specialties, and we will be implementing a reciprocal service to the mental health trust for patients requiring review of their physical health medications.

References:

1. Royal College of Psychiatrists. Physical health in mental health. Final Report of a scoping group. 2009.
2. National Patient Safety Agency. Risk matrix for risk managers. 2008



Improving the pharmaceutical care of patients on psychotropic medication admitted to an acute hospital – the impact of a proactive 'inreach' specialist psychiatric pharmacist service

Raliat Onatade, Pharmacy Department, King's College Hospital NHS Foundation Trust

Oluwakemi Oduniyi, Pharmacy Department, South London and the Maudsley NHS Foundation Trust

Introduction

- Patients with Severe Mental Illness and disabilities have a high risk of poor physical health and premature mortality. Ensuring adequate physical health monitoring can be challenging¹
- At King's College Hospital, the psychiatric liaison team (PLT) only see patients via a referral model
- In 2015, King's and South London and Maudsley Mental Health Trust (SLAM) collaborated to enable a specialist psychiatric pharmacist (PP), to be seconded to King's, to improve the pharmaceutical care and physical health of patients who were not seen by the PLT

Objectives

- PP would:
- Work closely with clinical pharmacists to carry out medication reviews
 - Improve the uptake of physical health monitoring of patients
 - Improve communication of medication review outcomes to GPs on discharge
 - Share and sustain learning with the pharmacists and doctors

Method

- Patient inclusion criteria agreed
- Daily electronic report of patients who met the criteria was produced
- PP uses the electronic patient record and drug chart to identify patients to review
- PP goes to the wards to see patients and discuss with pharmacists, doctors and nurses
- Discharge letters enhanced with specific information regarding psychotropic medication
- Two independent, senior psychiatric pharmacists used an adaptation of the NPSA risk matrix² to assess the clinical significance of the PP's input
- Ethics approval not required

Results

- Between December 2015 and April 2016, 200 patients reviewed (205 patient encounters)
- 124 (62%) required input from PP
- 50/124 (40.3%) patients had recommendations made to their GP

- 313 clinical contributions were made (2.5 per patient). Chart 1 shows categories
- 44% (66/151) physical health monitoring interventions were implemented whilst in hospital
- 31% (31/99) drug related problems (DRPs) led to a change in therapy. Table 1 shows DRPs
- The relative risk of a patient on clozapine being at high or extreme risk without input was 2.46 (95% CI 1.33 to 4.56, p= 0.02)
- Of the patients on SSRIs who required input, 71% (22/31) were also at high or extreme risk, compared to 18% of patients on non-SSRIs (Chi-square = 41.4, p < 0.0001). Chart 2 shows risk ratings

Chart 1
Types of clinical contributions
n = 313

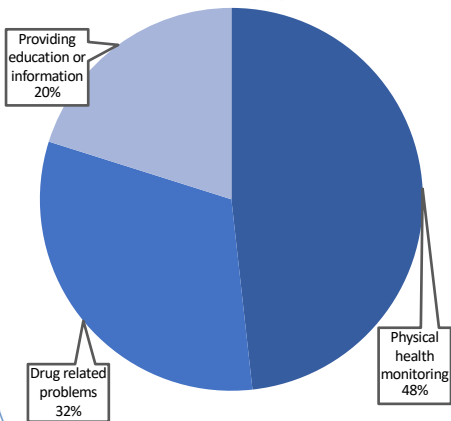
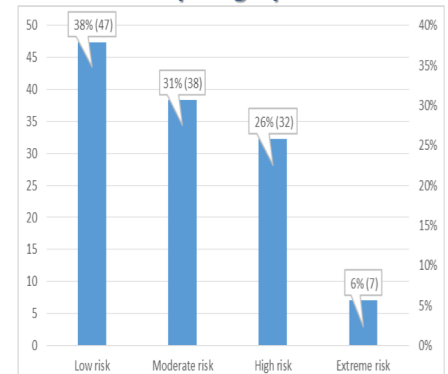


Table 1
Types of DRPs

Drug-related problems	
Problem type	Number (%)
Drug interaction	18 (18%)
Therapeutic drug monitoring	14 (14%)
Prescribed dose too high	13 (13%)
Preventative therapy	11 (11%)
Drug selection problem	8 (8%)
Drug supply	7 (7%)
Adverse event	4 (4%)
Contraindication	4 (4%)
Other	20 (20%)
Total	99 (100%)

Chart 2
Risk ratings for 124 patients
requiring input



High risk: citalopram = 16/32, clozapine = 7/32, other drugs = 9/32
Extreme risk: citalopram/escitalopram = 6/7, clozapine = 1/7

Conclusion

- A proactive, specialist pharmacist 'inreach' consultation service has significantly improved the care of patients taking psychotropic medicines in an acute hospital
- Nearly one-third of this vulnerable group of patients seen were at high or extreme risk without the specialist pharmacist's input
- Patients taking clozapine in particular are at high risk from DRPs
- Additionally, a large proportion of patients on SSRIs who required input were at high or extreme risk
- The proactive nature of the service has also ensured that many patients received their essential physical health monitoring

References

1. Royal College of Psychiatrists. Physical health in mental health. Final Report of a scoping group. 2009.
2. National Patient Safety Agency. Risk matrix for risk managers. 2008

We were delighted to recognise and celebrate the achievements of so many members at the UKCPA Conference in November 2016. Congratulations to everyone!

hameln Best Abstract

Lena Uddin & team

Usefulness of naloxone trigger tool to confirm opioid related adverse drug events



hameln Best Poster

Rhian Pearce & team

Achievement of the 2015/16 CQUIN goal for AKI at University Hospital Southampton



Delegates' Choice Poster

Emma Suggett

Electronic risk assessment as a means of directing a clinical pharmacy service



Best Pre-Registration Poster

U. Okechukwu & team

Drug-drug interaction review in patients started on oral hepatitis C therapy



UKCPA Patient Safety Award, sponsored by Pfizer

Rahat Onatade & team

Improving the pharmaceutical care of patients on psychotropic medication admitted to an acute hospital: the impact of a proactive 'inreach' specialist psychiatric pharmacist service



Shortlisted for Best Poster

Toby Capstick: Improving the quality of prescribing and administration records of oxygen

Lucy Devaney: Is blood glucose monitored appropriately in patients with diabetes?

Fozia Ahmad: Audit of the management of delirium in three adult intensive care units

Reena Mehta: Content validity of a tool for rating the significance of pharmacists' clinical contributions in hospital settings

Lena Uddin: Usefulness of naloxone trigger tool to confirm opioid related adverse drug events

Gareth Tyrell: Improving patient safety using eDocumentation creation in aseptic services

Mike Wilcock: Medication changes during the inpatient stay—not that easy to follow

Gillian Cavell: Reducing the risk of inpatient iatrogenic hypoglycaemia in hyperkalaemia treatment using e-prescribing and a multidisciplinary approach



**Improving the pharmaceutical care of patients on
psychotropic medication admitted to an acute hospital
– the impact of a proactive ‘inreach’ specialist
psychiatric pharmacist service**

Raliat Onatade

BPharm (Hons), MSc. (Clinical Pharmacy), MSc. (Clinical Risk Management),
IPresc., MRPharmS

Interim Pharmacy Services Manager and Business Support
Medway Hospital NHS Foundation Trust, UK

Aim

To describe the implementation and impact of a pharmaceutical care ‘inreach’ service for patients on psychotropic medications admitted to King’s College Hospital NHS Trust - an acute, non-psychiatric hospital

Overview

- What was the problem?
- What did we do?
- What was the impact?

Background

- KCH is a 1000-bed secondary and tertiary teaching hospital in South London, UK
- Several specialties including haematological malignancies, transplantation, viral hepatitis, HIV, neurosciences, foetal medicine, major trauma, hyperacute stroke unit, cystic fibrosis
- Many patients with severe mental illness are admitted for acute physical conditions
- Comprehensive ward and outpatient clinical pharmacy services - with Specialist Clinical Pharmacy Teams
- No specialist Psychiatric Pharmacist
- There is a psychiatric hospital across the road!

The Problem

- Patients with severe mental illness (SMI) can be referred to the physicians on the Psychiatric Liaison Team (PLT) for advice
- PLT is reactive (referral only) for acute issues
- Despite the PLT, we knew that patients on psychotropic medications had unmet pharmaceutical needs
- Pharmacists at KCH did not have specialist psychiatric expertise
- Patients with SMI and disabilities have a higher risk of poor physical health and premature mortality but do not engage well with primary care services
- Ensuring adequate physical health monitoring can be challenging



What did we do?

- Partnership with the psychiatric hospital across the road
- Co-opted a specialist psychiatric pharmacist to work at KCH, three or four days a week



Objectives of the service

- Work closely with clinical pharmacists to carry out medication reviews
- Improve the uptake of physical health monitoring of patients
- Improve communication of medication review outcomes to GPs on discharge
- To share and sustain learning with the pharmacists and doctors



How did we improve care?

- Inclusion criteria for eligible patients agreed
- Daily electronic report of patients who met the criteria
- PP downloads the patient list daily, uses the electronic patient record and drug chart to identify patients to review
- PP goes to the wards to see the patients and discuss any required actions with pharmacists, doctors and nurses
- Discharge letters are enhanced with specific information re psychotropic meds
- PP works 1 – 2 days at work back at base to maintain her specialist knowledge



Question

Patients taking which psychotropic medications should be targeted?



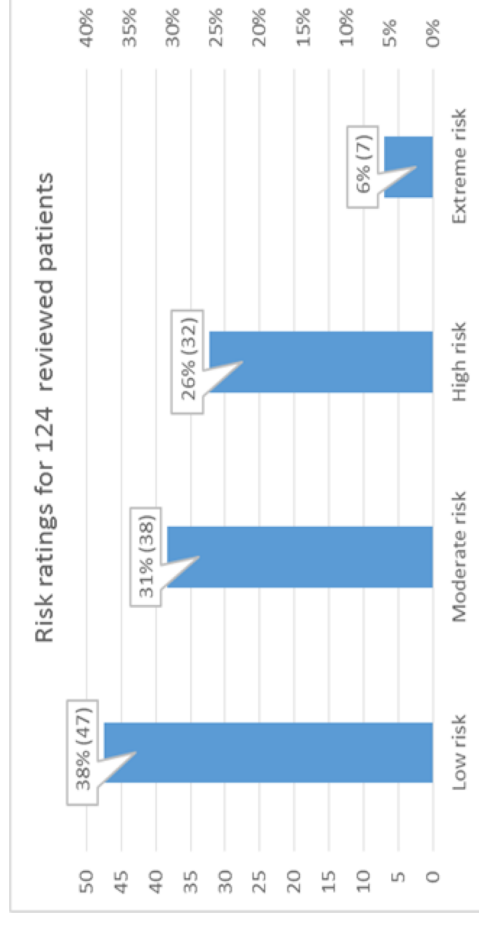
Evaluation

- PP recorded details of clinical contributions
- Two senior experienced psychiatric pharmacists used a risk matrix to assess the clinical significance of contributions (low, moderate, high, extreme risk)



Impact

- Between December 2015 and April 2016, 200 patients were reviewed (205 patient encounters)
- 124 (62%) required input from the PP
- 50/124 had recommendations made to their GP
- 313 clinical contributions were made (2.5 per patient)
 - 48% (151/313) related to physical health monitoring
 - 66/151 were implemented during the patient's stay
 - 32% (99/313) were drug related problems (DRPs)
 - 31/99 led to a change in therapy
 - 20% (63/313) involved providing education or information



Question

Patients taking which psychotropic medications should be targeted?

- A** Clozapine
- B** Citalopram/Escitalopram
- C** Other SSRIs



Impacts cont'd

- 19 patients were on clozapine, 14/19 (74%) required input
- 12% of all contributions involved clozapine
- 107 patients were on SSRIs, 31/107 (29%) required input
- 19% (60/313) of all contributions involved SSRIs
- Of the patients on SSRIs who required input, 71% (22/31) were also at high or extreme risk, compared to 18% of patients on non-SSRIs

Considering the whole population of 200 patients, the relative risk of a patient on clozapine being at high or extreme risk without input was 2.46 (95% CI 1.33 to 4.56, $p=0.02$).



Additional benefits

The PP has also

- Delivered teaching sessions for pharmacists and junior doctors
- Developed a psychotropic medication review checklist for pharmacists,
- Developed guidance on psychotropic drugs for new doctors
- Developed an aide-memoir for doctors and pharmacists on how to appropriately communicate psychotropic medication changes to GPs
- Introduced teaching rounds with pharmacists



Discussion

- A referral-only clinical service was not enough to identify care issues
- This proactive, inreach model is appropriate for other specialities
- Specialists working across organisations isn't only for medics



Key Takeaways

- Where expert clinical knowledge is lacking, proactive review by a specialist is essential to ensure appropriate care. ‘You don’t know what you don’t know’
- Partnering with other organisations is an effective, low-risk way of ensuring specialist pharmaceutical care for your patients
- Patients on clozapine admitted to hospital should ALWAYS be reviewed by a clinician with expertise
- If you have patients with SMI admitted to hospital, use the opportunity to provide physical health monitoring, even though this may not be an acute problem



Thank you for listening
raliat.onatade@nhs.net
[@ral_sez](https://twitter.com/ral_sez)

Grateful thanks go to our primary care commissioners who asked us to develop a service to improve the care of patients with SMI, and provided funding.





Certificate of Appreciation

This certifies that

Raliat Onatade

presented at the

**2016 ASHP Midyear Clinical Meeting & Exhibition • Las Vegas, NV
December 4 – 8, 2016**

A handwritten signature in black ink, reading "Paul W. Abramowitz", is written over a horizontal line.

*Paul W. Abramowitz, Pharm.D., Sc.D. (Hon.), FASHP
Chief Executive Officer*



Guild of Healthcare Pharmacists

The Guild of Healthcare Pharmacists exists to defend the interests of its individual members

Month: December 2016

The President's Blog December 2016

Whilst my blog is only covering two months it has been another busy period for the Guild. On November 4th and 5th the UKCPA held their conference in Manchester and the Guild was there to support the event. We were able to meet many members and potential members at our stand and we ran two of the sessions.

On Friday morning Roisin O'Hare, our Education and Development Lead and Wasim Baqir, our Communications Lead took us through a form of speed-dating where we pitched our research and development ideas to members of the group. It was enormous fun and fired a lot of enthusiasm. Colenzo Jarrett-Thorpe, National Officer for Health for Unite and Ursula Gotel, one of our Terms and Conditions Leads led a session on Flexible Working, Pay and Pensions. It is never too early to think about your pension, even if it seems a long way off now.

On the Friday dinner I was able to present Guild awards. Ron Pate received his Honorary Vice- Presidents bar, Colin Rodden received the Guild Silver Award and Alison Beaney received the Guild Gold Award. It was a great honour for me to present these awards to such deserving recipients. It was also a great honour to see Ann Page present UKCPA lifetime achievement awards to Mike Scott and Duncan McRobbie.

If you would like to nominate someone for a Guild Award please do so through your Regional Member. The Guild Silver Award is made to a pharmacist who has made an outstanding contribution to the practice or politics of pharmacy at a regional level and the Guild Gold Award is made to a pharmacist who has made an outstanding contribution to the practice or politics of pharmacy at a national level.

On November 10th the Procurement and Distribution Interest Group ran another successful one day conference in Birmingham and a number of Guild Council members also attended the Pharmacy Management Conference in London the following week.

It is always a pleasure to meet our membership and to keep in touch and hopefully we will be able to do more of this next year.

The Sustainability and Transformation Plans will be being discussed in your region. It is important that you find out what is going on both at a regional and national level. Do go to the Unite Health Sector part of the Unite website to keep in touch and look out for what is happening locally.

I was able to attend the Royal Pharmaceutical Society's launch of the new standards for reporting, sharing, learning, taking action and review of incidents. This is an important piece of work which will support the culture of openness that is needed within the profession.

I was once again able to attend the American Society of Hospital Pharmacists Mid-Year Conference which was held in Las Vegas. The size of the conference (over 20,000 delegates) and the spectacle that is Las

Vegas was overwhelming but talking to enthusiastic young pharmacists about their work is the same whichever continent you are on.

On the Monday of the conference there is a session called International Pearls (there are a lot of Pearls Sessions) and I was proud to support two British Pharmacists who were presenting their work. Alastair Gray presented his Refer to pharmacy project and Raliat Onatade presented work done on setting up a liaison psychiatry pharmacist when she was working at King's College Hospital. Both these presentations were focussed on providing the best patient care and I was very proud to be in the audience.

I also attended a meeting with the ASHP Board and the leaders of other hospital pharmacy organisations. Everyone was interested to hear about pharmacist prescribers and it is clear that many are envious of this role. We should be supporting our young pharmacists in obtaining the qualification and GHP will be looking at how job specifications should be amended to support the role in the New Year.

Whilst many of you would have returned from a trip to the States to put your feet up I came back and sang in my choir's Christmas Concert the next day and had a Guild Council meeting the following Tuesday. However, sharing the work that we do on Guild Council is always invigorating. We have considered 74 consultations this year and responded to 43.

We also discussed our communications survey and we will be looking at new ways to communicate with you in the next year.

Our Northern Ireland representative, Kathy Stevenson, is retiring and her place is to be taken by Katherine Devlin. We wish Kathy well and look forward to welcoming Katherine. We are still looking for Regional Members for Wales and the South East; if you would be interested in getting involved please contact me (details below).

On behalf of Guild Council may I wish you a happy and successful 2017.

Vilma Gilis December 2016

Vilma.gilis@nhs.net

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New directions in health-system pharmacy

9 May, 2017 11:37 AM

More than 22,000 participants attended the 51st Midyear Clinical Meeting of ASHP. Programme highlights included implementation of second victim schemes, data-mining to optimise precision medicine, hepatitis C management and mental illness

Laurence Goldberg
Editorial Consultant, HPE
Christine Clark
Editor HPE

When adverse events result in patient harm, support for the health care professionals involved is often neglected, sometimes with far-reaching, even fatal, consequences.

The term 'second victim' has been applied to these individuals, according to Natasha Nicol (Global Medication Safety Officer, Cardinal Health, US). Second victims have been defined as "those who suffer emotionally when the care that they provide leads to patient harm". Two high-profile cases in the US illustrated the problem: Kim Hiatt, an experienced paediatric nurse, was dismissed after being involved in a fatal medication error. In spite of retraining, she could not find work and took her own life a few months later. Pharmacist Eric Cropp was involved in a fatal medication error. He was convicted of involuntary manslaughter and jailed; his pharmacy licence was permanently revoked.

Dr Nicol described her own experience in a busy, understaffed, poorly equipped hospital pharmacy. A potassium chloride injection that she had issued for a two-year-old child had caused a fatal cardiac arrest. She was horrified to see her initials on the label of the product and was plunged into a turmoil of emotions – shock, bewilderment, self-doubt and despair. That evening she considered leaving pharmacy altogether but then decided to fight for changes to prevent future incidents of the same type.

She told the hospital board that the pharmacy needed "the best automation", facilities to segregate paediatric and adult services in the pharmacy and specialist paediatric pharmacists. The changes were made and the hospital pharmacy service improved dramatically over the next few years. Nevertheless, Dr Nicol admits that, even now, years after the event, there are few days when she does not remember the pain of the incident.

Previous work had shown that the most common source of support for second victims was colleagues and peers, Kara Berasi (Assistant Director, Ambulatory Pharmacy Services, University of Florida Health Shands Hospital, US) told the audience. The first step should always be to remove the individual, who is likely to be flustered and anxious, from the situation. It is important that health care professionals learn to recognise the signs of distress in a colleague and learn what to say. Questions such as, "Are you OK?" and, "How do you feel about what happened?" are appropriate. On no account should a colleague say things like, "Everything will be OK" or "Don't worry about it".

A six-phase recovery trajectory for second victims has been described (see Table 1).

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Table 1 Second victim recovery trajectory

Stage	Features
Stage 1	Chaos and accident response – second victim immersed in reflection “How did it happen?”
Stage 2	Intrusive reflections – understanding the impact, re-enacting the event; “What did I miss?”
Stage 3	Restoring personal integrity – worry about sharing details, worry about consequences “Will I ever be trusted again?” Impact realisation occurs at some point during first three stages.
Stage 4	Enduring the inquisition – worries about job security, not knowing whom to turn to, not sharing information out of fear, eating and sleeping problems.
Stage 5	Obtaining emotional first aid – “Why did I respond in this manner?” “Is this the right job for me?”
Stage 6	Moving on – thriving, surviving or dropping out. Thrivors – learn, rationalise and go on to be patient safety champions and help future victims. Survivors – still troubled by thoughts of the event; affected by PTSD style triggers. Dropping out – unable to overcome intrusive thoughts, feelings of inadequacy.

About 30% of second victims experienced personal problems and 13% contemplated leaving their jobs or leaving their profession altogether, according to Jenna Merandi (Medication Safety Coordinator, Nationwide Children’s Hospital, Ohio, US). In July 2013 her hospital embarked on the development of the “You matter” campaign – a multidisciplinary initiative to support second victims. A four-hour training programme for peer supporters has been developed. This includes teaching of basic peer support skills by clinical psychologists.

Training programmes always start with people describing their own experiences of incidents – “Some people have shared things that they have not talked about for 20 years”, said Dr Merandi. More than 500 peer supporters have now been trained and more than 400 encounter forms have been completed, the majority of which come from the emergency room (ER) and intensive care unit (ICU). Trained peer supporters wear green ‘You matter’ badges, she added. One unexpected finding was that interpreters often became second victims; one had explained that it could be extremely traumatic to deliver bad news in a foreign language to a patient or relative.

Speakers agreed that awareness of the phenomenon of second victimhood and the existence of a non-punitive culture were important ingredients for setting up support schemes for second victims.

Informatics and precision medicine

‘Big data’ can be harnessed to guide and inform precision medicine, according to Russ Altman (Professor of Bioengineering, Genetics, Medicine and Biomedical Data Science, Stanford University, California, US). He described three landmark projects in this field.

Pharmacogenetics

A patient’s genetic status is “knowable in advance” and there is now sufficient evidence to make pharmacogenomics a useful tool in routine practice. The advent of rapid, cheaper, complete genome sequencing combined with user-friendly clinical guidelines, such as the pharmacogenomics implementation consortium (CPIC) guidelines, makes this possible, said Professor Altman. CPIC guidelines for specific drugs have been designed to make the research literature accessible and usable for practitioners rather than researchers.

The CPIC guidelines have been developed from the research-oriented pharmacogenomics knowledge base (PharmGKB) database that was produced in Professor Altman’s laboratory. A key feature of the database is pathway diagrams that show how every drug listed is metabolised. CPIC guidelines are now available for warfarin, tricyclic antidepressants, codeine and many others. However, physicians do not have the time or the knowledge to use genetic information (about medicines) routinely – ideally pharmacists should be selecting and prescribing the most suitable drugs and doses for individual patients, he said.

“Almost everyone has something that makes genome sequencing worthwhile,” said Professor Altman. For example, a colleague had turned out to be heterozygous for a null mutation in CYP2C19 – an enzyme that is critical for metabolism of proton pump inhibitors, anti-epileptics, clopidogrel and citalopram. When, in future, drug treatment is required, this information could be useful in selecting the most appropriate agents, he suggested.

Unexpected drug interactions

Existing databases contain a wealth of information that can be searched using appropriate techniques. In one such project, the 20 million abstracts in PubMed were searched to identify the 170,000 abstracts that contained a sentence that included a drug, a gene and an effect. Researchers argued that if a gene is involved in the metabolism of a number of drugs, then drug–drug interactions might occur as a result of competition for pathways. This hypothesis was tested by sifting the data to find drug combinations that were known to interact. Next, other combinations were explored. One of the predicted drug–drug interactions was metoprolol and dextromethorphan, both of which are metabolised by CYP2D6. The discovery of a published case study of a woman given the two drugs in hospital who suffered from severe side effects from both drugs



confirmed the existence of the interaction, said Professor Altman.

Using records and FDA databases to discover drug interactions

The database of adverse reactions reported to the Food and Drug Administration (FDA) could be another source of information about hitherto unreported drug interactions. FDA releases all adverse reaction reports, but these reports are generally considered to be "very noisy data" and difficult to interpret, said Professor Altman.

One researcher analysed reports for patterns of events that predicted the likelihood of a drug altering blood glucose. In this way he was able to identify drugs that are known to alter blood glucose as a side effect – and this served as validation for the method. He then examined pairs of drugs, neither of which appeared to affect blood glucose alone, but when taken together, gave the same signal as known glucose-altering drugs. Many combinations were too rare to be of interest but the combination of pravastatin and paroxetine seemed likely to occur in practice. It was estimated that there could be 0.5–1.0 million Americans taking both drugs. In order to demonstrate an effect, it was necessary find patients who were taking one of these drugs, had had a glucose measurement and then were given the other drug and had a further glucose measurement within a 40-day time frame.

Only 11 patients could be found at Stanford but colleagues at Vanderbilt and Harvard supplied more than 100 additional cases. The pooled analysis showed an average increase in blood glucose levels of 16mg/dl. "This is not a class effect – it is specific to the pravastatin-paroxetine combination", emphasised Professor Altman. The initial study excluded diabetics because it was reasoned they would have detected and corrected the rise in glucose as part of their routine monitoring. However, when diabetics were analysed, the average rise in blood glucose on the combination was 60mg/dl – "crazily high", said Professor Altman. The effect was confirmed experimentally in a mouse model – the mice were fed on butter and Sprite.

In a further development of this work, the researcher examined Internet search logs (Bing) to see whether patients were experiencing symptoms and searching for information. He found that patients searching for information on the two drugs and phrases such as "peeing a lot" caused a ten-fold 'bump' above the baseline. As a result, the FDA has now started collaboration with Microsoft to identify signals of problems with newly released medicines. Such findings do not prove there is an effect but they do provide useful signals, said Professor Altman.

Tweets might also be a good source of information, but they are difficult to interpret using current techniques because tweets are not written in proper English, he added. He also acknowledged that if a side effect is mentioned in the news, many people search for it online and create a spurious peak in data.

Future developments in this field include 'drug repurposing' as informatics helps to uncover 'unofficial' effects of established drugs, suggested Professor Altman.



Hepatitis C

Working closely with patients on the management of hepatitis C is a big opportunity for hospital pharmacists to improve patient safety, outcomes and efficiency - and patient feedback indicates that pharmacists really add value, Carmen Rodriguez (Gregorio Marañón University Hospital, Madrid, Spain) told the audience at the International Pearls session.

Some 700,000 people in Spain are sero-positive for hepatitis C virus (HCV) and the Spanish national strategic plan calls for all patients with hepatic fibrosis of grade 2 or above to be treated with direct-acting antiviral drugs (DAAs) within two years. Three full-time pharmacists are involved in the multidisciplinary team that manages patients with HCV infection at the Gregorio Marañón University Hospital. During the 12-month period April 2015–April 2016, there were 4845 pharmacy consultations involving 1146 patients. About a quarter of patients were infected with both HIV and HCV and 62% had grade 3 or 4 hepatic fibrosis. The results showed that 92% of patients achieved a sustained virological response. The most common side effect was anaemia and approximately 7% experienced severe adverse events. Cost savings of nearly €1.5 million were achieved as a result of pharmacists optimising the DAA therapy, said Dr Rodriguez.

Psychiatric 'inreach' service

Patients with serious mental illness who are admitted for acute physical conditions can have significant unmet pharmaceutical needs



in relation to their psychotropic medication. Raliat Onatade (Interim Pharmacy Services Manager, Medway Hospital NHS Foundation Trust, UK) described how a pharmacist from a nearby psychiatric hospital had been co-opted to provide specialist psychiatric pharmacy 'inreach' services on several days each week at Kings College Hospital, London, UK. "Where specialist clinical knowledge is lacking, pro-active review by a specialist is essential – you don't know what you don't know", she explained.

During the period December 2015 to April 2016, 205 patient encounters and 313 clinical contributions were made. Patients taking clozapine or selective serotonin reuptake inhibitors were most likely to benefit from pharmacy interventions. The relative risk of a patient taking clozapine being at 'high risk' or 'extreme risk' without an intervention was 2.46 (95% CI 1.33–4.56, p=0.02), she said. The psychiatric pharmacist also developed a psychotropic medication review checklist for non-specialist pharmacists to use. It is not unusual for doctors to work across two or more organisations and it is a model that could usefully be adopted in pharmacy, concluded Ms Onatade.

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Nov 27, 2017

Expansion of Medication Review LIS to cover patients admitted to King's College Hospital and taking psychotropic and/or antidepressant medication

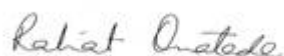
We propose to expand the Medication Review work to patients on psychotropic and antidepressant medication, admitted to hospital, and not already under the care of the psychiatric liaison team. This is because the Psychiatric Liaison Team conduct comprehensive reviews of all patients referred to them, and also provide discharge summaries for the patients' primary care providers.

The medication review will include an assessment of any physical health monitoring/investigations required, or primary care follow up. We will send Medication Review letters to GPs as part of the scheme. The same criteria for identifying which patients get a medication review letter, will be used - i.e. inpatients for 7 days or more, as this works well.

The pharmacist will liaise with the psychiatric liaison team, attending weekly rounds and supporting them with medicines queries.

The pharmacist should be at Band 8a, because of the specialist nature of this work. Prof David Taylor, Chief Pharmacist at South London and the Maudsley, has agreed to second one of his pharmacists until the end of March 2016. SLAM are currently recruiting to a new Band 8b pharmacist psychiatric liaison post to cover Maudsley and GSTFT, and this person will provide professional supervision to the 8a

Next steps are to confirm a start date for this person with Prof. Taylor on the secondment.



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LIS Progress Report: Clinical medication review of patients on psychotropic medication at King's College Hospital, Denmark Hill.

Background

NHS England has committed to reduce the 15 to 20 year premature mortality in people with severe mental illness (SMI) and improve their safety through improved assessment, treatment and communication between clinicians.

One of the National CQUIN goals for 2015/2016 is to promote physical healthcare for patients with SMI by improving:

- (i) Cardio Metabolic Assessment and treatment for Patients with psychoses
- (ii) Communication with General Practitioners

At KCH, at any one time, there will be 10 to 15 patients a day on antipsychotics and an additional 70 to 80 patients on SSRIs (antidepressants).

Aims

- Deliver medication reviews to patients on psychotropic medication who are not seen by psychiatric liaison team at King's College Hospital, Denmark Hill. This will include Cardio Metabolic Assessments.
- Improve the communication of medication review outcomes (of psychotropic drugs) to patients and GP on discharge

Action to date

A Specialist Mental Health Pharmacist has been seconded to carry out medication review for patients with SMI and on psychotropic medication who are not seen by psychiatric liaison team (PLT) at King's College Hospital, Denmark Hill. The following has been achieved so far:

- Developed medication review inclusion and exclusion criteria for patients with SMI (schizophrenia, psychosis, schizoaffective disorder, depression).
- Developed an electronic method to identify all current inpatients on psychotropic drugs.
- Drafted a structured psychotropic medication review checklist for the pharmacy team in order to share and sustain learning.
- Reviewed 39 patients. A sample of 20 patients' reviews has been provided with this report. Currently, pharmacist is able to review 6 to 10 patients daily. Approximately a third requires an intervention.
- Started drafting standard wording to GPs for patients with SMIs. This will be incorporated in pharmacists' and doctors' teaching and learning resources and current CMRs.

- Started to document (and also advise teams to document) medication review recommendations in the discharge notification letters.
- Providing 1:1 teaching and support to pharmacists on the care of individual patients
- Meeting arranged for 25 January with the PLT pharmacist to discuss physical health monitoring of PLT patients as it is currently not being done.
- Agreed detailed objectives and timescales with Raliat Onatade (Pharmacy Lead)
- Arranged a pharmacy teaching session on 10 February 2016

Next steps

- Continue medication reviews for non PLT patients
- Continue to document and (also advise teams to document) medication review recommendations in the discharge notification letters
- Explore ways of making the medication reviews a sustainable process after LIS funding ends
- Meet with the psychiatric liaison team (PLT) to discuss ways of working together to improve the health of SMI patients at DH.
 - Identify ways to support clozapine patients seen by the PLT and discharged to the GP/CMHT
- Work with the EPMA/EPR team to create electronic medication review checklist that can be added onto EPR
- Prepare and undertake junior doctors' teaching re how to communicate discharge psychotropic drug reviews and physical health monitoring of SMIs to GPs
- Prepare a document on psychotropic drugs and how to communicate discharge information for insertion into the doctors' handbook

LIS Progress Report: Clinical medication review of patients on psychotropic medication at King's College Hospital, Denmark Hill.

Aims

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- Developed medication review inclusion and exclusion criteria for patients with SMI (schizophrenia, psychosis, schizoaffective disorder, depression).
- Developed an electronic method to identify all current inpatients on psychotropic drugs.
- Drafted a structured psychotropic medication review checklist for the pharmacy team in order to share and sustain learning.
- Reviewed a total of 94 patients, of which 56 patients required an intervention.
- Started to document (and also advise teams to document) medication review recommendations in the discharge notification letters.
- Providing 1:1 teaching and support to pharmacists on the care of individual patients.
- Met with the psychiatric liaison team (PLT) to discuss ways of working together to improve the health of SMI patients at DH.
- Met with the PLT pharmacist to discuss physical health monitoring of PLT patients as it is currently not being done.
- Agreed detailed objectives and timescales with Raliat Onatade (Pharmacy Lead).
- Provided pharmacy teaching sessions on the 10th and 17th February 2016.

Medication Review Summary

Total no of pts reviewed	Total no of pts who had an intervention	Total no of interventions	No of interventions preventing harm	No of physical health monitoring interventions	No of enquiries answered/advice given
94	56	144	52	92	60

Total no of pts who had an intervention	Total no of intervention
56	144
No of clozapine pts who had an intervention	No of clozapine interventions
6	18
No of SSRI pts who had an intervention	No of SSRI interventions
16	23
No of other antipsychotic pts (AP)who had an intervention	No of other AP interventions
32	74
No of lithium and other antidepressant pts who had an intervention	No of lithium and other antidepressant interventions
5	9

Next steps

- Continue medication reviews for non PLT patients and request physical health monitoring for PLT patients.
- Continue to document and (also advise teams to document) medication review recommendations in the discharge notification letters.
- Explore ways of making the medication reviews a sustainable process after LIS funding ends.
- Work with the EPMA/EPR team to create electronic medication review checklist that can be added onto EPR.
- Prepare draft standard wording to GPs for patients with SMIs. This will be incorporated in pharmacists' and doctors' teaching and learning resources and current CMRs.
- Prepare and undertake junior doctors' teaching re how to communicate discharge psychotropic drug reviews and physical health monitoring of SMIs to GPs on the 29th and 31st of March 2016.
- Prepare a document on psychotropic drugs and how to communicate discharge information for insertion into the doctors' handbook.
- Prepare a policy on co prescription of SSRIs and aspirin, clopidogrel and anticoagulants.

LIS Progress Report. April 2016

Clinical medication review of patients on psychotropic medication at King's College Hospital, Denmark Hill

Aims

- Deliver medication reviews to patients on psychotropic medication who are not seen by psychiatric liaison team at King's College Hospital, Denmark Hill. This will include Cardio Metabolic Assessments.
- Improve the communication of medication review outcomes (of psychotropic drugs) to patients and GPs on discharge

Action to date

A Specialist Mental Health Pharmacist has been seconded to carry out medication review for patients with severe mental illness (SMI) and on psychotropic medication who are not seen by psychiatric liaison team (PLT) at King's College Hospital, Denmark Hill. The pharmacist has been in post since December 2015. The following has been achieved:

- Met with the psychiatric liaison team (PLT) to discuss ways of working together to improve the health of SMI patients at DH.
- Met with the PLT pharmacist to discuss physical health monitoring of PLT patients as it was previously not being done. The PLT pharmacist has agreed to ensure the physical health monitoring of all patients reviewed by the PLT. She will also conduct teaching sessions on this for the PLT team. The PLT pharmacist is only on site once a week.
- Developed medication review inclusion and exclusion criteria for reviewing patients with SMI (schizophrenia, psychosis, schizoaffective disorder, depression).
- Developed and implemented an electronic method to identify all current inpatients on psychotropic drugs.
- Finalised a structured psychotropic medication review checklist for the pharmacy team in order to share and sustain learning. A copy has been given to all pharmacists and will be deployed electronically once the Trust's new EPR system is implemented.
- The specialist pharmacist documents (and also advises teams to document) medication review recommendations in the discharge notification letters.
- Ongoing 1:1 teaching and support to pharmacists on the care of individual patients as the need is identified.
- Working with Dr. Juliet Manyemba, guidance on psychotropic drugs and how to communicate discharge information has been prepared for insertion into the handbook for doctors working on Healthcare of the Aging Unit. This will become part of the new doctors' handbook from August 2016.
- Provided pharmacy teaching sessions on the 10th and 17th February 2016
- Provided junior doctors' teaching re how to communicate discharge psychotropic drug reviews and physical health monitoring of SMIs to GPs on the 29th and 31st of March 2016. This was combined with the teaching session on communicating discharge information.
- Finalised standard wording to GPs for patients with SMIs. This is now in the 'Guidance on appropriate terminology for communicating medication changes on electronic discharge notification' which will be distributed as an aide-memoire for doctors and pharmacists

LIS Progress Report. April 2016

Clinical medication review of patients on psychotropic medication at King's College Hospital, Denmark Hill

Medication Review Summary

166 patients have been reviewed. 92 required an intervention.

	18/12/15 to 19/2/16	22/2/16 to 12/4/16 (including 3 weeks annual leave)
Total no of pts reviewed	94	72
Total no of pts who had an intervention	56	36
Total no of interventions	144	68
No of interventions preventing harm	52	43
No of physical health monitoring interventions	92	40
No of enquiries answered/advice given	60	47
No of clozapine pts who had an intervention	6	6
No of clozapine interventions	18	18
No of SSRI pts who had an intervention	16	8
No of SSRI interventions	23	16
No of other antipsychotic pts (AP) who had an intervention	32	17
No of other AP interventions	74	39
No of lithium and other antidepressant pts who had an intervention	5	3
No of lithium and other antidepressant interventions	9	6

There may be a trend of fewer interventions during the second reporting period, although it is difficult to be sure because it covers a shorter period than the previous one. However, we have observed that pharmacists are now more knowledgeable and confident in advising on changes to psychotropic medication. This is a direct result of the input of the specialist pharmacist.

Next steps

The specialist pharmacist is funded until the end of June 2016.

- Priorities are to
 - Continue medication reviews for non PLT patients and request physical health monitoring for PLT and non-PLT patients.
 - Continue to ensure documentation of medication review recommendations in the discharge notification letters.
 - Discuss (with SLAM and KCH colleagues) options for making the medication reviews a sustainable process after LIS funding ends.

Other work that will be completed

- Work with the EPMA/EPR team to create the electronic medication review checklist ready to be added onto EPR once the new system is ready. Meeting booked with EPMA lead on 15/4/16.
- Finalise clinical guideline on co-prescription of SSRIs and aspirin, clopidogrel, NSAIDs and anticoagulants.
- Prepare an abstract for presentation at the United Kingdom Clinical Pharmacy Association Conference in November 2016

Guidance on appropriate terminology for communicating medication changes on discharge notification letters

1. Stopped Medicines	
1.1	<p>Where a medicine has been stopped and changed to a formulary alternative.</p> <p><i>"Stopped and changed to ... As per KCH/PRUH formulary- no clinical reason."</i></p>
1.2	<p>Where a medicine is permanently stopped. GP will not be asked to specifically follow up:</p> <p><i>"Stopped due to..."</i></p>
1.3	<p>Where a medicine is stopped temporarily with the possibility for GP to restart, GP will be provided with specific follow up guidance:</p> <p><i>"Temporarily stopped due to ... GP to please review ...inweeks and consider restarting when"</i></p>
1.4	<p>Where a psychotropic medication (e.g. antipsychotic, antidepressant) has been withheld / stopped:</p> <p><i>"Temporarily stopped / Stopped due to---- (add 'on advice of psychiatric liaison team' if appropriate)"</i> <i>"GP to please monitor mental state / mood closely; and liaise with the CMHT for advice on alternative medication if required."</i></p> <p style="text-align: center;">OR</p> <p><i>"Stopped due to ---- (add 'on advice of psychiatric liaison team' if appropriate)"</i> <i>"GP to please monitor mood closely as <antidepressant name> stopped. For advice on an alternative antidepressant, please contact the Medicines Information Department at the South London and Maudsley Hospital on Tel: 02032282317."</i></p>
1.5	<p>Where a medicine offers limited further benefit to patient:</p> <p><i>"Stopped as part of medicines rationalisation- unlikely to be of any further clinical benefit"</i></p>
1.6	<p>Where the risks of treatment now outweigh benefit to patient:</p> <p><i>"Stopped as part of medicines rationalisation as risks of treatment deemed to outweigh clinical benefit"</i></p>
2. Medicines to continue	

Guidance on appropriate terminology for communicating medication changes on discharge notification letters

2.1	When warfarin is continued:	<i>"To continue. Variable dose as per INR. INR on discharge... Patient referred to ... anticoagulation clinic for follow up."</i>
2.2	When monthly/three monthly injection is continued, date of next injection due if it was given during admission:	<i>"To continue. Given during admission on....Next dose due"</i>
2.3	Where a recommendation to check/monitor/review level is made, time frame to always be given. Reference range not necessary unless the level on discharge is stated:	<i>"Please check...in ...days/weeks. Level on discharge..."</i>
2.4	Where medication has not been stopped during admission as team do not feel they have enough information to stop it.	<i>"Unclear indication. GP to please review if this can be stopped"</i>
3. Started medicines and or dosage amendments		
3.1	Where NOACs are started and first 3 months to come from KCH (as usual):	<i>"Started for... on advice of anticoagulation team. Started on... For 3 month supply from KCH then we will transfer care to GP"</i>
3.2	Where NOACs are started and immediate transfer of care to GP has been arranged (e.g. for incorporation into compliance aid):	<i>"Started for...on advice of anticoagulation team. Started on...GP to take over prescribing so that medication can be incorporated into compliance aid as discussed with Dr..."</i>
3.3	Where a high risk or potentially inappropriate drug, is started there should be a clear reason for choosing this drug and a clear plan (review/stop date) documented.	<i>" Started for...Chosen as...For 3 weeks until review in dermatology outpatient clinic with a view to stopping"</i>
3.4	Where palliative medicines are started:	<i>"Started in case of... End of life comfort medication."</i>
3.5	Where a psychotropic medication was started on admission:	<i>"Started for...on advice of psychiatric liaison team. GP to please monitor patient for tolerability and response; and liaise with the CMHT for advice if required."</i>
3.6	Where a psychotropic medication dose reduced:	<i>"Reduced dose due to... (add 'on advice of psychiatric liaison team' if appropriate). GP to please monitor mood / mental state closely."</i>
3.7	Where a psychotropic medication dose increased:	<i>"Increased dose because... (add 'on advice of psychiatric liaison team' if appropriate). GP to please monitor patient for tolerability and response; and liaise with the psychiatric team for advice if required."</i>

Guidance on appropriate terminology for communicating medication changes on discharge notification letters

3.8	Where medicines are started where they are an acute course i.e. the whole course will be given on discharge, GP does not need to add this to their records e.g. antibiotics, prednisolone, colchicine.	"Started for ... Until... Acute course only."
3.9	Where a patient is given a reducing dose of steroid, the indication for the reducing dose should be given.	"Reducing dose. Started for exacerbation of COPD. Patient has had 3 courses of prednisolone within 3 months. For 30mg OM until....then reduce by 5mg every 3 days until STOP"
3.91	Where inhaler is started there will be a clear indication and follow up plan.	"Started for....GP to please review in 1 week with a view to stopping"
3.92	Where folate or iron supplementation is started a clear review date and the relevant levels should be included.	"Started for...Hb=...Ferritin=...GP to please review ongoing need in 2 months"

4. Recommendations for monitoring physical health of patients on psychotropic medication

4.1	Where cardio-metabolic monitoring was conducted on admission for patients on antipsychotics:	<p>Cardio metabolic monitoring conducted on admission as patient on <antipsychotic drug name> ...BP ...HbA1c...Chol...Weight /BMI ...</p> <p>Example: BMI is greater than 30: GP to please offer structured lifestyle advice and follow NICE guidelines for obesity</p>
4.2	Where all cardio metabolic monitoring was not conducted on admission and patient is on an antipsychotic:	No records of cardio metabolic monitoring during this stay. GP to please check lipid profile and HbA1c. (Add recorded BP and weight if known)
4.3	Where a patient is on lithium therapy:	<p>Example: A lithium level was done on admission 1.03 mmol/l (ref range 0.6-1mmol/l) ... slightly elevated, but a dose change is not indicated at the moment. GP to please recheck lithium level on...12 hours post dose.</p> <p>Example: A lithium level, renal function and thyroid function was done on admission. Lithium level ... (ref range 0.6-1mmol/l), TSH... Thyroxine... eGFR...</p> <p>GP to please check lithium level every 3 months; renal and thyroid function to be checked every 6 months.</p>

**South East London Area Prescribing Committee (APC)
25 January 2017 at Tooley Street
Approved minutes**

1. Welcome, and Introductions

2. Conflicts of Interest – declarations

The Chair requested any interests, either general or relating to the meeting agenda be declared. There were no declarations made. Members were reminded of the need to submit up to date declarations of interest for 2016/17.

3. Minutes, action log and attendance list of Last Meeting and Matters Arising.

The minutes of the October meeting were accepted as accurate.

Matters Arising:

There were no matters arising.

Action log:

- Rheumatology and Inflammatory Bowel Disease pathway monitoring frameworks- LGT action to communicate to commissioners during contracting process remains pending. Action due to March 2017.

4. Pathway updates:

- **Ophthalmology**

The pathway has been agreed by secondary care clinicians and requires the addition of costings. KCH Formulary Pharmacist to add these and the final draft to be presented to the Medicines and Pathways Review Group by March 2017.

- **Psoriasis**

The pathway is on hold pending the publication of updated guidance from the British Association of Dermatologists.

- **Haematology - Immune thrombocytopenic purpura**

The pathway has been delayed due to capacity issues for the current Chair. A new Chair has now been sourced – a Consultant Haematologist from Guy's and St Thomas's NHS Foundation Trust and the group will be reconvened.

5. South East London Area Prescribing Committee Terms of Reference revision

The Medicines and Pathways Group (MPRG) approved the following major revisions to the terms of reference:

- Reference to liaison with Regional Medicines Optimisation Committees added
- Added note to clarify that in exceptional circumstances prescribable devices will be considered by the triage panel for review by MPRG
- Documented evidence of local authority support for submissions where they are the commissioners
- Question added to assess hospital activity impact
- Clarification that patient numbers for all trusts are required
- Added definitions of the three amber categories

MPRG agreed to retain the existing declaration of interests form pending the publication of the NHS England consultation outcome. The committee ratified the revised terms of reference.

6. Good news feed – Presentation by winner of UKCPA patient safety award:

- Improving the pharmaceutical care of patients on psychotropic medication admitted to an acute hospital – the impact of a proactive ‘in-reach’ specialist psychiatric pharmacist service

Patients with serious mental health conditions admitted to King’s College Hospital for physical conditions and who were prescribed clozapine, citalopram, escitalopram or other selective serotonin reuptake inhibitors, were reviewed by a specialist mental health pharmacist. The aim of the review, which was in partnership with South London and Maudsley NHS Foundation Trust, was to review medication, increase the uptake of physical monitoring, communicate outcomes to the patient’s GP and to share and sustain learning. Between December 2015 to April 2016 two hundred patients were reviewed, of which 62% required intervention by the specialist pharmacist. Reviewed patients were risk rated prior to the intervention. 313 clinical contributions were made (2.5 per patient)

- 48% (151/313) related to physical health monitoring
- 66/151 were implemented during the patient’s stay
- 32% (99/313) were drug related problems (DRPs)
- 31/99 led to a change in therapy
- 20% (63/313) involved providing education or information

Questions from the committee:

- *What next – is there a role in other hospitals?*

The KCH contract meeting is to discuss ongoing funding for the role.

- *Was the local care record reviewed at point of hospital admission?*

This was not possible at the time of the project but will be if and when the work carries on.

The Chair thanked the presenter for sharing an interesting and informative piece of work with the committee.

7. Red, amber and grey (RAGG) list for South East London

The RED list has been in place for some time and AMBER and GREY lists have now been developed. The committee is asked to ratify the RED list update and the new AMBER and GREY lists.

RED List update:

The RED list currently includes non-formulary drugs and this raises concerns about potential confusion among clinicians over whether or not they can prescribe the drug. Non-formulary status to be highlighted in comments to clarify.

AMBER List:

AMBER has been categorised as 1-3 depending on whether or not a full shared care or transfer of care is required. The committee welcomed this as it is much clearer.

GREY List:

Eltrombopag for aplastic anaemia to be added.

PW33

Content validity of a tool for rating the significance of pharmacists' clinical contributions in hospital settings

Reena Mehta, Raliat Onatade

42. Impact of a modified Geriatric Medication Game® on pharmacy students' empathy toward older adults
Flynn, S^a, Haughey, S^b, O'Hare, R^c, a. Level 4 MPharm student, QUB; b. Director of Education, School of Pharmacy, QUB;
c. Lead Teacher Practitioner Pharmacist, NI University Network

Background

It is estimated by 2040, nearly one in four people in the UK will be aged 65 or over¹. In the UK, 45% of prescriptions are dispensed to patients over the age of 65². Demonstrating empathy towards patients can assist in optimising clinical outcomes, as well as providing better higher levels of patient satisfaction³. The Geriatric Medication Game® (mGMG) was developed to highlight the challenges experienced by elderly patients when managing their medication and was adapted by the research group to reflect practice in the UK including patient experiences in the NHS.

Objectives

Pre and post participation in the mGMG;

1. Determine the empathy of the first year MPharm cohort using the adapted Jefferson Empathy Scale
2. Compare the attitudes of first year students towards the aging population pre and post mGMG.

Methods

An adapted Jefferson Scale of Empathy-Healthcare Profession Students (JSE-HPS) was used to measure the baseline empathy of the entire first year MPharm cohort. A representative (sex, GB, international) sample of 16 students were selected from volunteers and allocated to pre or post mGMG focus groups. JSE-HPS was repeated post participation. The transcripts were analysed via thematic analysis. This study required and received ethical approval.

Results

The first year cohort (n=98) had a mean empathy score from JSE-HPS of 79.91/100 with post-mGMG participants (n=16) scoring 81.25.

Four key themes were identified from the focus groups;

1. Understanding the patient's perspective
2. Access to healthcare
3. Discrimination
4. Impact on future practice.

Conclusions

The first year pharmacy students as a cohort (n=98) achieved a mean empathy score of 79.91/100, compared to the post-mGMG participants (n=16) who achieved a mean empathy score of 81.25, a definite improvement in empathy post mGMG. Both of these scores indicate a higher level of empathy than expected for first year students although there is no optimum score for empathy for healthcare students⁴. Most students entered the game with pre-existing, self-determined, high levels of empathy and participation reinforced these already high levels. Empathy has been shown to decline over time with healthcare students⁵ and the School hope to repeat this workshop later in the MPharm to determine any deviations in student empathy. Students interviewed also believed that incorporation of this game into future training programmes within the MPharm or during the pre-registration year would be extremely useful.

References

1. National population projections for the UK, 2014-based: www.ons.gov.uk (accessed 15th June 2016).
2. Spinewine A et al.; Appropriateness of use of medicines in elderly inpatients: qualitative study. *British Medical Journal*. 2005; 331: 935.
3. Kim SS, Kaplowitz S, Johnston MV. The effects of physician empathy on patient satisfaction and compliance. *Evaluating Healthcare Professionals*. 2004; 27(3): 237-251.
4. Hall M, Hanna L, Hanna A, McDevitt C. Empathy in UK pharmacy students: assessing differences by gender, level in the degree programme, part-time employment and medical status. *Pharmacy Education*. 2015; 15(1):241-247.
5. Galanos AN, Cohen HJ, Jackson TW. Medical education in geriatrics: the lasting impact of the Aging Game. *Educational Gerontology*. 1993;19:675-82.

43. Content validity of a tool for rating the significance of pharmacists' clinical contributions in hospital settings

Reena Mehta, Binat Onatade, Kings College Hospital NHS Foundation Trust, London, on behalf of the IMPACCTS (Instrument for rating PhArmy Clinical Contributions To care Significance) group

Background

There are currently few validated instruments for rating the clinical significance of pharmacy contributions to care, but no accepted gold standard⁽¹⁾. Over the past 6 years, King's College Hospital Pharmacy have developed an in-house tool for this. Originally based on the Hatoum tool⁽²⁾, it has six ordered categories, consisting of 43 statements (rules). The tool is used by other hospitals, but it has not been validated. Validation ensures that the instrument measures the intended construct. The aim of this project was to test the content validity of the tool as the first stage of a larger research project.

Objectives

Objectives were to

- Design a method of content validity testing to ensure the statements in the tool were sufficiently clear and simple
- Modify the tool, if necessary

Method

Ethics approval was not required. There were two parts to the study.

Part one took place between February and April 2016. The 43 statements were randomly divided between three separate online surveys, stratified such that each survey contained at least one statement from each category. An email with a link to one of the three surveys was sent to sixty senior hospital pharmacists nationally, to forward on to their contacts. Respondents were asked to rate the clarity and simplicity for each statement on a 4-point Likert-type scale (1 = not clear/simple, 4 = clear/simple), and to add suggestions for improvement. The statements were revised in line with pre-defined criteria and thematic analysis of respondents' comments.

Part two – A 9-member expert panel was convened in May 2016. Panellists initially separately rated the revised tool using the same 4-point Likert-type scale. Statements which did not achieve an item-level Content Validity index (I-CVI) of at least 0.8 (maximum possible score is 1), for either clarity or simplicity, were then discussed in a group meeting and revised until consensus was obtained.

Results

Part one - 188 complete responses were received across the three surveys. All statements achieved a modal score of 4. 23/43 statements were reviewed, of which 19 required revision. One statement was separated into two.

Part two - 5/44 statements achieved an I-CVI of less than 0.8 (range 0.4 to 1) for either clarity or simplicity, or both. 91% of statements had a modal score of 4. The average CVI for the whole tool was 0.91 for clarity and 0.96 for simplicity. During the panel discussion, all five statements were revised and achieved consensus.

Conclusions

A robust, recognised process has been undertaken to ensure good content validity. Further studies planned are construct validity, comprehensiveness and inter- and intra-rater reliability. These will support use of the tool in both research and practice.

A limitation may be that the tool is only being validated for use in hospitals at this time. Repeat studies would be needed if the tool were to be used in other settings.

References

1. Vo TH *et al.* Tools for Assessing Potential Significance of Pharmacist Interventions: A Systematic Review. *Drug Safety* (2016);39(2): 431-46.
2. Hattaram HT *et al.* Evaluation of the contribution of clinical pharmacists: inpatient care and cost reduction. *Drug Intelligence Clinical Pharmacy* (2008);22(3): 252-9.

44. Pharmacy technician transcription of discharge prescriptions in the Royal Alexandra Hospital: Pilot study

O'Prey A, Green S, Munro K, Royal Alexandra Hospital, Paisley, NHS Greater Glasgow and Clyde

Background

Delayed patient discharge from acute hospitals affects bed availability for new admissions. Previous health improvement work regarding patient flow at the RAH identified that production of the electronic discharge prescription or immediate discharge letter (IDL) using the TrakCare® system was a contributory factor. Traditionally it is the responsibility of the junior doctors (FY1, FY2) to generate the IDL. However, this is often afforded a lower priority than other tasks and junior doctors have been shown to be more likely to contribute to errors when prescribing or transcribing than other healthcare professionals¹. These errors can lead to further delays in the discharge process. In order to address inefficiencies in the discharge process, a pilot of medicine transcription to the IDL by a pharmacy technician was proposed.

Aim

To establish whether medicine transcription by pharmacy technicians would affect the time of patient discharge from secondary care and the number of transcription errors on the IDL.

Method

An initial pilot was conducted prior to data collection on all medical wards over a 12 week period between March and June 2015. Exclusions included prescriptions written out of hours and wards outwith the medical tower. The data was divided into two groups, IDLs generated by junior doctors and by pharmacy technicians (which were countersigned by the doctors). The outcome indicators were, number of transcription errors rectified by the pharmacist, time interval for prescription completion (take home medicines ready) and patient discharge. Data was analysed using Minitab® and descriptive statistics, T-tests and Mann-Whitney tests were used. This study did not require ethics approval.

Results

1002 IDLs were reviewed and 890 (89%) were suitable for inclusion for analysis. The number of prescriptions containing transcribing errors was significantly lower in the pharmacy technician group (24 (n=392) vs 143 (n=498) p = 0.001). The maximum number of errors per prescriptions for junior doctors was 12 compared with 1 for technicians. The majority of transcription errors were classified as having potential to cause low to moderate harm to patients. The average time taken for prescription completion was 3.2 hours shorter for technician transcribed prescriptions. The average time for discharge from hospital was 13.3 hours shorter for technician transcribed prescriptions.

Conclusion

The pilot demonstrated that IDLs generated by pharmacy technicians were significantly more accurate than those by junior doctors. It has been recognised that the time taken to rectify errors can contribute to delays in preparation of discharge medicines. Improved accuracy of the prescriptions transcribed by the technician may also help to improve patient safety.

Although it was acknowledged that the technician might be directed towards more urgent discharges, the shorter completion time for IDLs was consistent across different sub-groups of same day and next day discharges. The addition of a transcribing technician helped reduce the time taken for patient discharge.

References

1. Hobson, R. and Sewell, G. Factors influencing provision of pharmacist discharge prescription transcription services and authorisation requirements of pharmacist-written prescriptions. *International Journal of Pharmacy Practice*, 2002;10(S1):62-62.

45. Timeliness, accuracy and reconciliation of hospital discharge letters received by primary care

¹Parmar J, ¹Charlton A, ²Campbell J, ²Hall R,

¹University Hospitals NHS Foundation Trust, ²Old School Surgery and Pharmacy, Bristol

Background

The National Institute for Health and Care Excellence (NICE) recommend that medicines reconciliation (MR) upon hospital discharge should occur within 1 week of the GP practice receiving the information and before further prescriptions are issued [1]. However, 84% of GPs "occasionally" or "never" receive information about why medicines have been altered in hospital [2] and subsequently 43% of patients have discrepancies between the medication prescribed on discharge and those subsequently prescribed [3]. NICE also recommend that MR in primary care should be undertaken by a healthcare professional, however the Care Quality Commission found that clerical staff undertake this in 17% of Practices [1,4]. This study aims to assess the timeliness of receipt and accuracy of information provided to Old School Surgery (OSS) upon hospital discharge and the subsequent MR at OSS.

Content validity of a tool for rating the significance of pharmacists' clinical contributions in hospital settings

Reena Mehta & Raliat Onatade

Pharmacy Department, King's College Hospital NHS Foundation Trust, London
on behalf of the IMPACCTS (InstruMent for rating PhArmacy Clinical Contributions To care Significance) group

Introduction

- There are currently few validated instruments for rating the clinical significance of pharmacy contributions to care, but no accepted gold standard ⁽¹⁾.
- Over the past 6 years, King's College Hospital Pharmacy have developed an in-house tool
- Based on the Hatoum tool ⁽²⁾ it has six ordered categories, containing 43 statements (rules)
- The tool has not been validated but is used by other hospitals
- Validation ensures that the instrument measures the intended construct

Aim

To ensure the content validity of the tool as the first stage of a larger research project

Figure 1. IMPACCT Significance Levels (Categories)

- Level 0 – Leads or could lead, to an undesirable outcome/pharmacist's actions were inappropriate
- Level I – Good practice. No harm or clinical benefit to the patient
- Level II - Minor benefit to patient care OR made treatment easier OR prevented an incident of minimal harm OR an error/incident which could have required extra observation
- Level III - Includes most Level II contributions which involve high-risk medications. If medication is changed to make treatment more logical, or for staff convenience or ease, this is a level II contribution.
- Level IV – Prevented an incident that could have potentially led to reversible organ failure, harm or increased level of care
- Level V – Prevented an incident that could have resulted in a life or death situation, permanent organ damage or severe harm, OR an error which could have potentially caused major permanent harm.

Method

Ethics approval was not required. There were two parts to the study:

Part one (February - April 2016)

- The 43 statements were randomly divided between three separate online surveys, stratified such that each survey contained at least one statement from each level.
- An email with a link to one of the three surveys was sent to sixty senior hospital pharmacists nationally, to forward on to their contacts.
- Respondents were asked to rate the clarity and simplicity for each statement on a 4-point Likert-type scale and to add suggestions for improvement.
- The statements were revised in line with pre-defined criteria and thematic analysis of respondents' comments.

Part two (9-member expert panel, convened in May 2016)

- Panellists initially individually rated the revised tool using the same 4-point Likert-type scale.
- Statements which did not achieve an item-level Content Validity index (I-CVI) of at least 0.8 (maximum possible score is 1), for either clarity or simplicity, were then discussed in a group meeting and revised until consensus was obtained.

$$I - CVI = \frac{\text{Number of respondents giving a rating of either 3 or 4}}{\text{Total number of respondents}}$$

Figure 2. Excerpt from survey

Below is a list of statements describing actions that are categorised under Level III. Please rate each sentence for its clarity and simplicity, by ticking the appropriate boxes

Note: Clarity - how easy is it to understand and interpret the statement?

Simplicity - how easy is it to read the statement? Is it a basic, uncomplicated statement?

19. Advising changes to medication to help reach therapeutic goals and /or comply with guidelines/evidence based medicine.

	1. Not clear/simple	2. Needs major revision to be clear/simple	3. Needs minor revision to be clear/simple	4. Clear/simple	I'm unable to answer this question
Clarity					
Simplicity					

Results

Part one

- 188 complete responses received
- All statements achieved a modal score of 4
- 23/43 statements were reviewed, of which 19 required revision
- One statement was separated into two

Part two

- 91% of statements had a modal score of 4
- The average CVI for the whole tool was 0.91 for clarity and 0.96 for simplicity
- 5/44 statements achieved an I-CVI of less than 0.8 (range 0.4 to 1) for either clarity or simplicity, or both
- During the panel discussion, all five statements were revised and achieved consensus

Discussion & Conclusion

A robust, recognised process has been undertaken to ensure good content validity. Further studies planned are construct validity, comprehensiveness and inter- and intra-rater reliability. These will support use of the tool in both research and practice.

A limitation may be that the tool is only being validated for use in hospitals at this time. Repeat studies would be needed for the tool to be used in other settings.

References

1. Vo TH *et al.* Tools for Assessing Potential Significance of Pharmacist Interventions: A Systematic Review. *Drug Safety* (2016);39(2): 131-46.
2. Hatoum HT *et al.* Evaluation of the contribution of clinical pharmacists: inpatient care and cost reduction. *Drug Intelligence Clinical Pharmacy* (1988);22(3): 252-9.

PW34

Evidence for the outcomes and impact of clinical
pharmacy: context of UK hospital pharmacy practice

Raliat Onatade, Sandra Appiah,
Martin Stephens, Hemda Garelick

Evidence for the outcomes and impact of clinical pharmacy: context of UK hospital pharmacy practice

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► Additional material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/ejhp-2017-001303>).

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Received 14 May 2017

Revised 13 August 2017

Accepted 15 August 2017

EAHP Statement 1: Introductory Statements and Governance.
EAHP Statement 4: Clinical Pharmacy Services.
EAHP Statement 6: Education and Research.

ABSTRACT

Objectives The role of clinical pharmacists in hospitals has evolved and continues to expand. In the UK, outside of a few national policy drivers, there are no agreed priorities, measures or defined outcomes for hospital clinical pharmacy (CP). This paper aims to (1) highlight the need to identify and prioritise specific CP roles, responsibilities and practices that will bring the greatest benefit to patients and health systems and (2) describe systematic weaknesses in current research methodologies for evaluating CP services and propose a different approach.

Method Published reviews of CP services are discussed using the Economic, Clinical and Humanistic Outcomes framework. Recurring themes regarding study methodologies, measurements and outcomes are used to highlight current weaknesses in studies evaluating CP.

Results Published studies aiming to demonstrate the economic, clinical or humanistic outcomes of CP often suffer from poor research design and inconsistencies in interventions, measurements and outcomes. This has caused difficulties in drawing meaningful conclusions regarding CP's definitive contribution to patient outcomes.

Conclusion There is a need for more research work in National Health Service (NHS) hospitals, employing a different paradigm to address some of the weaknesses of existing research on CP practice. We propose a mixed-methods approach, including qualitative research designs, and with emphasis on cost-consequence analyses for economic evaluations. This approach will provide more meaningful data to inform policy and demonstrate the contribution of hospital CP activities to patient care and the NHS.

INTRODUCTION

Clinical pharmacy (CP) is a relatively new health-care discipline, compared with professions such as medicine and nursing. Traditionally, pharmacists were solely concerned with procurement, dispensing, manufacturing and supply of drugs.¹ The official development of CP in the UK began in 1970, with the publication of the government-commissioned 'Noel Hall Report'.² Since then, several influential policy documents have been published which have contributed to the development of CP in the UK (see online supplementary file 1). This has led to CP being advocated as vital to the optimal and safe care of patients.³ Notably, the development of CP in mainland Europe is more variable although expanding.⁴⁻⁶ Despite the widespread support for CP in hospitals however, there is no agreement within the profession on which components of practice are most important. Moreover, research

into the outcomes of CP has not kept pace with the developments in practice.

The UK National Health Service (NHS) is under severe financial pressure, a situation which is likely to remain for the foreseeable future.⁷ Medicines remain the most common therapeutic intervention offered to patients and their costs are significant. The NHS spends £6.7 billion on hospital medicines annually.⁸ Most NHS trusts spend between 5% and 10% of their total costs on drugs⁸ and medicines expenditure increases by an average of 15% every year.⁹ Significant resources are invested by trusts to secure their CP workforce. Annually, £0.6 billion is spent on hospital pharmacy services and in 2015/2016 pay costs of hospital pharmacists alone averaged nearly £3 000 000 per 100 beds.¹⁰ It is therefore important that these resources are deployed such that they give greatest benefits.

This paper explores the complexities of hospital CP practice and the consequent difficulties producing robust research evidence on the effectiveness of CP. The aim is to evaluate and highlight the quality of evidence and to suggest an alternative approach for researcher-practitioners.

The evolving role of clinical pharmacists

The complexity of CP practice is reflected in the fact that various definitions have been proposed. In the literature, the terms clinical pharmacy 'services', 'activities' and 'interventions' are used interchangeably.^{11 12} The difficulties in agreeing a single definition of CP relate to the diverse nature of the discipline. This is problematic for researchers and impedes the development of a coherent vision.

CP is concerned with both medicines policy and the treatment of patients, with the aim of achieving optimal use of medicines.^{11 12} Additional aspects of CP, as advocated by The European Society of Clinical Pharmacy, the Societe Francaise de Pharmacie Clinique and the United Kingdom Clinical Pharmacy Association are concerned with attributes of the pharmacist that allow 'the appropriate, effective and safe use of medicines'.¹³ The role of CP has also expanded to include pharmaceutical care—providing drug therapy to achieve 'definite outcomes that improve a patient's quality of life'.¹⁴ Medicines optimisation is a more recent, overarching concept that considers both CP activities and pharmaceutical care.¹⁵

Hospital clinical pharmacists interact with patients on wards, on multiprofessional ward rounds or in clinic settings to treat, monitor and advise on the use of medicines. However, CP clearly encompasses more than just direct patient care. Therefore, activities such as production of guidelines and policies, advising on drug expenditure controls, training and



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To cite: Onatade R, Appiah S, Stephens M, et al. *Eur J Hosp Pharm* Published Online First: [please include Day Month Year]. doi:10.1136/ejhp-2017-001303.

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Clinical pharmacy services to a surgical ward
- a cost and consequences analysis

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Results

Twenty-nine patients were included in the study, 25 (86%) of whom experienced at least one insulin prescription error or information discrepancy. A total of 69 insulin prescription errors or information discrepancies were identified during the study. Fifty insulin prescription errors were identified, mostly involving insulin device (n=26), dose (n=11), time (n=4) and frequency (n=3), with 47 (94%) being rectified by pharmacy intervention. Information discrepancies involved the complete omission of insulin from the clerking drug history (n=13) or insufficient information to prescribe insulin (n=6) documented during clerking. Medicines reconciliation was completed by pharmacy within 24 hours of admission for 100% and 86% patients on the admissions and surgical wards, respectively.

Conclusions

Insulin prescribing errors and information discrepancies are common at the point of hospital admission. Pharmacists play an active role in improving quality and safety through identifying and rectifying potentially harmful insulin errors and information discrepancies. Prompt and comprehensive documentation of insulin information is recommended on admission to improve communication and reduce the potential for insulin prescribing errors. Although this study was undertaken at a single trust, results align with national evidence regarding prescribing errors and the role of the pharmacist, supporting the positive impact pharmacists have on improving insulin safety in hospitals.

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50. Costs and consequences analysis of a clinical pharmacy service to a surgical ward

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Background

Hospital clinical pharmacy (CP) services improve patient care and medication management and provide economic benefits¹. Most Pharmacy departments strive to provide comprehensive clinical services during the week, but less so at weekends. However, Pharmacy departments are now required to work towards the provision of a 7-day service, an ambition which could have considerable resource implications. Cost-consequence analyses provide disaggregated costs and outcomes of a service. The aim of this study is to analyse the impact on a surgical ward, when a CP service is not provided on Sundays, compared to weekdays when a full CP service is provided.

Objectives

To compare the staff costs of pharmacy- and non-pharmacy provided medication-related activities. To determine any consequences to patient care when non-pharmacy staff carry out medication-related activities.

Methods

Prospective, observational study on a 26-bed surgical ward in a large London teaching hospital trust. During the week, CP staff spend most of their time on wards. There is no pharmacy presence on wards on Sundays - ward staff visit the dispensary to obtain medication and manage all medication-related activities themselves.

Multiple data sources were utilised to measure and cost the time spent on medication-related activities and pharmacy-initiated interactions on weekdays and Sundays – staff were shadowed and timings documented. They also self-reported using a template. Sunday observations included dispensary and ward activities.

Semi-structured interviews of nurses and doctors were carried out to understand their experiences and the consequences of no CP service on Sundays; retrospective chart review to identify missed or delayed drug doses and analysis of prospectively recorded clinical pharmacy contributions. SPSS was used to analyse data. This study required and received ethics approval. All tools were piloted before use.

Results

Observational data were collected over 15 weekdays and 4 Sundays in May and June 2016. Five nurses and 2 junior doctors were interviewed. On a weekday, a pharmacist spent 243 mins on all medication-related activities, costing £69.08/day. On a Sunday, doctors spent 280 mins and nurses spent 141 mins (total cost of £106.70) on four main medication-related activities - ordering medication, organising discharge medication, taking drug histories and dealing with medication-related queries. If undertaken by a Band 6 pharmacist, these activities would take 70.53 minutes, costing £20.86, a fifth of the cost of nurses and doctors. There were 5.13 contributions/weekday and 1.75 contributions/Sunday (made on Monday). The mean delay before administration of the first dose of a new drug was significantly higher on Sundays (404 minutes cf 388 minutes, independent t-test p<0.05).

Conclusion

The clinical pharmacy inputs are similar to those previously reported². Limitations include the short study time, and few interviewees; generalisability cannot be guaranteed. Consequences of not having a CP service on a ward included higher staffing costs, longer waits for patients to have their first dose and fewer CP opportunities to improve care.

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Clinical pharmacy services to a surgical ward - a cost and consequences analysis

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Introduction

- Hospital clinical pharmacy (CP) services have economic and patient care benefits
- Despite the benefits, most UK pharmacy departments provide a reduced clinical service at weekends compared to weekdays
- As Pharmacy departments must now work towards providing 7- day services, the economic implications of this should be assessed
- Standard economic evaluations such as cost-benefit and cost-effectiveness analyses require benefits / consequences to be combined into a single outcome
- The complexities of CP are such that it is often difficult to aggregate the consequences of interventions¹
- CCAs do not try and put all the costs and benefits into the same units. Costs and benefits / consequences are presented in a disaggregated form that may be more useful

Aim

The aim of this study was to determine the disaggregated costs and consequences for a surgical ward when a CP service was not provided on Sundays, compared to weekdays when a full service was provided.

Methods

The study took place between May and June 2016.

Setting: 26-bed surgical ward in a large teaching hospital trust. During the week, CP staff spent most of their time on wards dealing with all medication-related queries and activities. There was no pharmacy presence on any wards on Sundays; ward staff visited the dispensary to obtain medication.

Data collection: Multiple data sources were used - Costs were calculated from

✓ directly-observed and reported staff time spent on medication - and pharmacy-related activities. On Sundays, Observations took place in the dispensary and on the ward

Consequences were determined from
✓ semi-structured interviews of nurses and doctors to obtain their experiences of the impact of no CP service on Sundays

✓ retrospective chart review to identify missed or delayed drug doses
✓ analysis of prospectively recorded clinical pharmacy contributions

This study required and received ethics approval. All tools were piloted before use.

References

1. Onatade R, Appiah S, Stephens M, et al. Eur J Hosp Pharm Published Online First: October 2017. doi:10.1136/ehjpharm-2017-001303
2. Onatade R, Miller G, Sanghera I. A quantitative comparison of ward-based clinical pharmacy activities in 7 acute UK hospitals. *Int J Clin Pharm* Published Online First: November 2016. doi:10.1007/s11096-016-0386-2.

Results

- Observational data collection took place over 15 weekdays and 4 Sundays
- Interviews were conducted with 5 nurses and 2 junior doctors

Table 1. Comparative costs of pharmacy and ward staff on weekdays and Sundays

Costs of medication- and pharmacy -related activities	Weekdays (all activities)		Sundays	
	Time	Cost	Time	Cost
Per day				
A. Mean pharmacy time	243 mins (range: 198- 288), SD: 88.89)	£69.08	Discharge medication : 40 mins Screening requests for inpatient medication: 24 mins	• Discharge: £12 • Screen requests for inpatient medication supplies: £7.20
B. Nursing time	NA	NA	280 mins*	£64.40
C. Doctors time	NA	NA	141 mins*	£42.30
Total cost		£ 69.08/ day		£125.90/ day

*Nurses and doctors undertook 4 main medication-related activities on Sundays - ordering medication, organising discharge medication, taking medication histories, and dealing with queries.

Organising discharge medication was seen as the most time-consuming activity by doctors and nurses on a Sunday.

Cost of nursing and medical time spent on medication-related activities on a Sunday = £106.70. Based on the weekday data, if these same activities were undertaken by a Band 6 pharmacist, They would typically take 70.53 minutes at a cost of £20.86.

Table 2. Some care consequences of the lack of a Sunday clinical pharmacy service

Consequence	Weekday	Sunday
A. Mean length of time the dose of a new drug is overdue before administration of first dose	• Mean: 6 hr 28 min (388 mins) (SD: 6 hr 17 min (377 mins)); n = 22	• Mean: 6 hr 44min (404mins) (SD: 8 hr 40 min (520 mins)); n = 4
	Independent t-test, p < 0.05	
B. Clinical contributions	• 5.13 contributions/ weekday • 1.71 contributions/ pt./ weekday	• 1.75 contributions/Sunday • 0.87 contributions/ pt./ Sunday

Discussion & Conclusion

- The clinical pharmacy inputs are similar to those previously reported²
- The consequences of a lack of Sunday service on this surgical ward included:
 - ✓ Higher costs - Medical and nursing staff carrying out standard medication-related activities was five times the cost of having a junior pharmacist undertake these activities
 - ✓ Longer waiting time for patients to have their first dose of new items on a Sunday
 - ✓ On Sundays, patients received fewer clinical pharmacy contributions.

There is an economic and clinical case to be made for extending clinical pharmacy services to weekends and a costs and consequences study is a useful and appropriate methodology for evaluating the impact of clinical pharmacy services.

Limitations: Much of the data was self-reported. Limited data collection on Sundays.