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***Project report for Doctorate in Professional Studies
(Veterinary General Practice)***

Introducing clinical audit into veterinary practice

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Abbreviations

AAHA	American Animal Hospital Association
BSAVA	British Small Animal Veterinary Association
BVA	British Veterinary Association
CertAVP	Certificate of Advanced Veterinary Practice
EBM	Evidence Based Medicine
EBVM	Evidence based Veterinary Medicine
MU	Middlesex University
NICE	National Institute for Clinical Excellence
PDF	Professional Development Foundation
PDSA	People's Dispensary for Sick Animals
PMS	Practice Management System
POC	Post-operative complication
RCVS	Royal College of Veterinary Surgeons
RCVS PSS	RCVS Practice Standards Scheme
SPVS	Society of Practicing Veterinary Surgeons

Summary

This project has been designed to increase our understanding of the clinical audit process, as it applies to veterinary practice in the UK, and to facilitate its introduction in a manner that brings maximum benefit to all stakeholders.

It examines the medical scenario to define the process and glean any relevant information. It then takes the form of an action research project that examines in depth the introduction of the audit process into a small animal practice in outer NW London, including its impact upon the standard of clinical care supplied to its patients, and the sociological effect upon the working environment. The provisional conclusions reached in this way have then been triangulated with the findings of a focus group of veterinarians that are actively involved in the subject, and a broader questionnaire of veterinary practitioners and support staff.

The research was able to highlight the key obstacles to introducing clinical audit into a veterinary practice, the benefits that can be achieved when its introduction has been successfully achieved, and how those benefits may ameliorate the time and expense involved. In particular, clinical audit was found to be an effective tool for improving client concordance with the recommended treatment regime for the animals in their care, and thus able to improve both patient welfare and practice income. The sociological changes that are needed to put clinical audit into place successfully, encouraging the development of an integrated team of highly motivated reflective practitioners working within a no-blame practice culture, can bring many additional benefits.

This work has taken place at a time when various pressures, such as the RCVS Practice Standards Scheme, and an increased public demand for professional accountability have focused interest in the subject. The author has been leading the way in increasing public awareness of the process, encouraging further research, and ensuring that clinical audit is incorporated into the new modular postgraduate CertAVP designed to develop the learning and skills of the practicing vets of the future.

Chapter 1 – Introduction

My personal journey into the world of clinical audit began with the premise that the specific skills required by veterinary surgeons working in general practice were currently under-recognised and under-valued. The establishment of the SPVS Masters Group in 2000 provided a forum for like-minded veterinary surgeons to establish a framework for a new RCVS Certificate in Advanced Veterinary Practice. As a group we researched the competences that should be required from an “Advanced General Practitioner”. It was at this stage I realised that the measurement of clinical performance as quantified by the clinical audit process seemed to be one of the key areas of competence that should be required, for what greater measurement of competence can there be than that of the effectiveness of the actual delivery of service?

Background research revealed that this mirrored the attitude in the medical profession, where clinical audit has received ever-increasing attention and resources in recent years (National Institute for Clinical Excellence, 2002); (Morrell & Harvey, 1999). This also reflected the way in which political opinion has moved within the veterinary profession, largely as a response to the demand from society and government for greater accountability from the professions, and reassurance as to their maintenance of standards. The sixth and final Shipman Report (see www.the-shipman-inquiry.org.uk), produced over 100 recommendations in the light of the lessons learnt by the murder by Harold Shipman of over 200 of his elderly patients. This included a recommendation that there should be a system of revalidation in place whereby doctors would face objective tests which would allow their fitness to practice to be properly evaluated. Although the situation in the veterinary profession is not directly analogous to our medical colleagues, there is almost certain to be a knock-on effect when a new Veterinary Surgeons Act is introduced, which is likely to be in the next few years.

The RCVS has responded by including clinical audit as a requirement for attainment of their Tier Two and Tier Three practice standards (Royal College of Veterinary Surgeons, 2004), and in turn generated a demand from veterinary practitioners for information about this new skill (Viner 2003).

Whatever one's attitude to clinical audit, it is impossible to deny that it is an area worthy of investigation. It is remarkable that an area of such potential importance to veterinary practice has been so neglected as a research topic. This may be a reflection of a bias within the veterinary profession towards "pure" scientific research, and away from more qualitative studies that investigate systems and processes rather than purely clinical data, such as the *Journal of Evaluation in Clinical Practice* and *Clinical Governance: An International Journal*. But whilst there is a clear need for clinical research to provide the evidence base that clinical audit requires (indeed, the audit process will help to drive a demand for practically-orientated clinical research), it is also important to try and ensure that management systems evolve to best utilise the developments that become available, not only in terms of diagnostic and therapeutic tools, but also in the electronic practice management systems that are required to effectively perform any audit processes.

My literature review demonstrates that there is no problem laying claim to originality for my work, as the literature is almost entirely devoid of research investigating the audit process within a veterinary context. More of a problem has been establishing boundaries for what is feasible within the restraints of my resources. It is only natural to wish to "set the world to right" in one fell swoop, and it was a salutatory process within the research methodology phase of my original Master's dissertation to realise that I would have to restrict my research to just a small area – attitudes within the veterinary profession to clinical audit (Viner 2003). My Doctoral thesis is certainly broader, but must nevertheless have boundaries: **I aim to investigate the practicality and effectiveness of introducing clinical audit into veterinary practice.**

This is a fairly discrete task, that I shall be tackling at two levels: firstly I shall be acting as a worker-researcher, together with the clinical team in my own veterinary practices, to carefully monitor the clinical, financial and sociological effects of its introduction, and secondly; I shall be using the clinical audit MSc group that I established and now facilitate, as well as contacts that I have developed with the profession at large, to act as sounding-boards to test the validity of the results that I have generated within my own workplace.

This project is being carried out within the context of a larger one, that aims to provide a framework for the introduction of clinical audit to the veterinary profession. This larger project is not directly relevant to the methodologies used within the narrow confines of this research module, but I refer to them here to help give the "broader picture", and have included information about the wider impact of my work in Chapter 6, backed up by some evidence of it in Appendix Seven. Activities that I have been involved in to bring about this objective include:

- The establishment of a new MSc group using the outline laid down by the SPVS Masters group in conjunction with the PDF and the MU National Centre for Work-Based Learning. This new group has brought together six experienced general practitioners to research individual aspects of clinical audit, and to work synergistically to develop an authoritative framework for its introduction, in a similar way to which our earlier group each studied aspects of postgraduate education for practicing vets.
- The running of a series of Roadshows, in conjunction primarily with SPVS, but also with other interested organisations, to raise awareness about the process and encourage other motivated practitioners to start to experiment themselves with its introduction. These Roadshows have included a workshop component, in order to stimulate an active reflection about the practical application of the process, and an email contact list of delegates has been built up.
- Setting up a "C" module in clinical audit for the new CertAVP to encourage those taking the new postgraduate certificate to study this area of practice governance in more depth. It is currently postulated that this will take the form of participation in a workshop similar to the SPVS Roadshow, plus an assessed report on a clinical audit project that the candidate has established in their own practice.
- Raising awareness of clinical audit via publications such as a review article in "In Practice" (Viner, 2004), an article in the Veterinary Record emphasising the need to learn from the experiences of the medical profession (Viner and

Jenner, 2005), and an Editorial in the Journal of Small Animal Veterinary Practice (Viner, 2005).

- A programme to raise the political profile of clinical audit as the most important component of any review of practice standards. In particular, I successfully stood for election to the Council of the RCVS on a platform that promoted my interest and knowledge of veterinary education and clinical audit. The RCVS is the body charged by the government with maintaining standards of veterinary practice, and I can now use my presence on the Council to try and ensure clinical audit becomes central to this. I have also held meetings with representatives of other relevant organisations, such as the Presidents of the BVA and of the SPVS, to further this end.

In the past, organisational changes within the veterinary profession have been formulated by establishing a working group of eminent “volunteers”, who have been charged with examining the options and dictating to the profession what they believe is required. The work of the SPVS Masters group in the field of postgraduate education was a pioneering example of how the rigour of an academic framework can produce a more authoritative end product based upon sound research, rather than individual opinion. Work-based learning and research gives practitioners an opportunity to tackle institutionally-based academics on an equal footing, or sometimes even with an advantage, because it gives a practical grounding to any conclusions that are reached. A Professional Doctorate as offered by Middlesex University provides the perfect framework for such a project, because the subject of clinical audit is intrinsically work-based in its nature, and the study of organisational change can only effectively be researched from within the organisations themselves. Yet the relationship is a symbiotic one, for the continued expansion of work-based learning (WBL) departments within the University system depends upon projects such as this, that are designed to help a profession improve the quality of the service that it offers:

“The main justification for the University to be involved in WBL in the workplace is the improvement that it brings to the performance of the organisation the University’s aspiration will be to make fundamental and far reaching contributions” (Portwood and Costley 2000).

I am hopeful that this piece of research will start off a process that will indeed make a "fundamental and far reaching contribution" to the quality of delivery of care to our patients and their owners. In order to achieve this, it will require the continued involvement of the profession, initially in the form of a small group of enthusiasts that have been stimulated to take the issue forwards, but hopefully in time as part of the mainstream of veterinary education.

Therefore, although a Doctoral thesis is invariably directed primarily at the academic community that has to decide whether the work involved is worthy of the Award, I am hopeful that this piece of work may also be of interest to those that are taking an interest in raising the standard of veterinary practice in this way: not just veterinary surgeons, but also veterinary nurses and practice managers.

Chapter 2 literature review

My review of the literature on clinical audit aims to answer the first and most fundamental research question: "What is clinical audit?", looking at the medical literature to help establish a definition that is applicable within the veterinary context. It also surveys the work that has been carried out into the subject in both the veterinary and the human medical fields. The aims of this are threefold:

- To understand more about the underlying principle of the audit process from the experience of those that have already put it into practice.
- To gather information about the originality of the work I have carried out.
- To look at any methodologies that have been used to study the application and effectiveness of audit, and assess their relevance to my project.

I start by reviewing the subject of clinical audit within the veterinary literature, and then look at the broader picture within the medical scenario, selecting those areas most relevant to the veterinary context. I then investigate the topic of change management, as it is very relevant to the implementation of clinical audit both on a national and a local level. Finally, I synthesise the information I have gathered into a short summary.

2.1 *Veterinary literature*

A search of the veterinary literature reveals a startling paucity of information on veterinary clinical auditing, and that much of what there is, has been written by authors from outside the profession.

The first article written by a UK veterinary surgeon that reviews the subject of clinical audit, appeared in *In Practice*, a supplement to the *Veterinary Record* (Mosedale, 1998). This article defines clinical auditing, as well as 'criteria' and 'standards'. It then describes three simple examples that were carried out in the author's practice, to measure client waiting times, general anaesthetic mortality rates, and post-surgical infections. It was interesting that the latter exercise highlighted a particular problem with one veterinary surgeon. Steps were taken to correct the problem, and a repeat audit was able to demonstrate an improvement in performance. In each

case, the author had made suggestions for refinements to the audit process, but unfortunately, no follow-up data has been published.

A further review article on clinical auditing appeared in the same journal four years later (Rayment, 2002). Perhaps disappointingly, it had been written by a human nurse studying for an MSc in the evaluation of clinical practice at the University of Westminster. The article summarised some of the information that is contained in the NICE document (NICE, 2000), but it is obvious that the author has no direct experience of veterinary practice, and the article adds very little to the information that a veterinary surgeon could glean from the original NICE document.

My own article, published in *In Practice* (Viner, 2004) summarized the work that I had carried out for my Masters dissertation, and informed the profession of the work that was being carried out for this project. This helped to raise awareness of the audit process and provided some information, mainly extrapolated from the human medical context, but did not provide any original data. It did, however, prepare the ground for the further information that will be forthcoming on this subject as a result of my work.

An article giving differing views on the subject of clinical audit appeared in *Equine Veterinary Education* with the intention of stimulating debate on the topic (Collier et al, 2000). One section is written for a veterinary audience by a medical surgeon, who has an interest in thoroughbred horses, and is a member of the British Equine Veterinary Association. He stresses the importance of audit within the medical profession, although points out that the Inquiry into Paediatric Cardiac Surgery at Bristol Royal Infirmary highlighted the fact that despite there being clear evidence of poor outcomes on the UK national database of surgical outcomes in paediatric cardiac surgery, the relevant authorities failed to act until a whistle-blower alerted the media. Thus, it is plainly essential to take cognisance of the results of audit and modify practice appropriately. He takes an example of an equine study of anaesthetic mortality rates, which showed that high mortality rates were identified in patients undergoing colic surgery or caesarean section, and a nine-fold increase in relative risk for surgery performed at the end of the veterinary surgeon's working day. It also uncovered an unexpected protective effect of acepromazine premedication. This

author finishes with a very short summary of his view of how a veterinary practice could selectively set up an audit.

A second viewpoint on veterinary audit is given by a veterinarian working at Colorado State University in the US. He gives a very negative view of veterinary audit, stating that "*In the veterinary ethos, most audit has tended to come from malpractice suits.*" He lists several difficulties that he envisages with developing an effective audit system in the veterinary field: -

- The lack of Randomised Clinical Trials (RCT's)
- The proliferation of poor quality data on the Internet
- The attitudes of veterinary students looking for a "quick fix"
- Sensitivity to criticism within the profession
- A reluctance to criticise our peers

He finishes by suggesting that clinical audit should be initiated and administered at a national specialty board level.

Whilst his point about a lack of a good veterinary evidence base for our work is valid, his other objections just seem to be excuses for sloppy practice. I also disagree that clinical audit should be something that is best imposed centrally – it is far more likely to be effective if it is seen as a local procedure carried out by a clinical team to meet their needs and improve their performance, although the collation of data on a national basis to try and establish inter-practice standards would obviously be of value.

Tim Mair, who is a member of the MSc clinical audit group, not surprisingly takes a much more positive view of the audit process in an Editorial in the *Equine Veterinary Journal* that he co-wrote with Dr N A White of the Marion DuPont Scott Equine Medical Centre in Virginia, USA (Mair & White 2005). They explain how, despite being quite a common procedure, surgery for equine colic still carries relatively high mortality and complication rates. Whilst this is to some extent due to the inherent nature of the disease process itself, they also contend that "*variations in surgical techniques and complementary treatments almost certainly also affect these rates. Careful monitoring and analysis of the results and complication rates of colic surgery*

should not only provide insights into risk factors for the development of negative outcomes, but also identify areas where individual surgeons or clinics can improve their success rates".

This editorial proposes the establishment of an international database of colic surgery to allow the appropriate comparison of clinical performance with local, national and international standards, claiming that the potential benefits to equine surgeons and their patients would be considerable.

This is a bold statement of intention, but the establishment of this database is currently underway. Any conclusions that can be drawn from its work will follow long after this project is completed, but the editorial does illustrate that an increasing awareness of the importance of clinical audit is not restricted to the small animal field of practice.

Personal conversations with US veterinarians, and the lack of other US articles on the subject of clinical audit, leads me to conclude that the position regarding clinical audit is not significantly more advanced in the US than in this country. Research carried out by the AAHA (2003) clearly identified compliance as a major barrier to effective health care. For example, although veterinarians estimated owner compliance to be about 75% for therapeutic diets that they recommended, the actual figure was 18% for cats and 19% for dogs. The report estimates that a lack of owner compliance accounts for an average of between \$639,700 and \$660,700 of lost potential additional revenue per veterinarian per year. It recommends several steps such as measuring compliance levels, establishing protocols, setting goals and tracking results, that actually follow the clinical audit process without actually calling it such.

There are several articles on the subject of Evidence Based Veterinary Medicine (Keene, 2000; Polzin at al., 2000), which is the first step along the route to establishing protocols to use for clinical auditing. In the UK, most of the information on the subject has appeared in non-peer reviewed articles, such as a series of articles published in 2003 in the weekly magazine *Veterinary Times* by Dr. Chris Chesney on EBM, a front page news report in the November 2002 issue reporting that the British Veterinary Hospital Association (BVHA, 2003) are to make clinical

auditing compulsory, and news reports in the *Veterinary Record*, such as that in April 2003 summarising the paper given by Sir Iain Chambers about the work of the Cochrane Collaboration. The latter is of particular interest, since it exists to collate data and establish best practice in human medicine, and is currently working with Dr. Chris Chesney and Professor Bob Michell in the UK, to set up a similar veterinary collaboration. Mark Holmes at the University of Cambridge is also doing some work into compiling CAT's – Critically Appraised Topics, that survey and evaluate the literature. A paper by Andy Sparkes at the 2005 BSAVA Congress that appraised the evidence base for the treatment of Feline Immunodeficiency Virus infection was also a marker of the increasing importance of this function by recognised experts in the field. This would be a major step in assisting veterinary practitioners to establish protocols without having to laboriously review all the literature themselves.

The UK book on EBVM (Cockcroft & Holmes, 2003), covers that topic in depth, but contains just two pages (pp186-187) on clinical auditing, suggesting some suitable topics for audit in small animal medicine, but offering no advice on the practicalities of going about the process. They refer to the British Veterinary Hospital Association guidelines on clinical audit, which have now been superseded by the new RCVS Practice Standards Scheme. It was launched on the 1st of January 2005, aiming to establish a voluntary framework to promote and maintain the highest standards of veterinary care, and to make more information available about veterinary practices, thereby giving clients greater choice. Under this scheme, any practice that wishes to register at the Tier 2 (equivalent to the old Veterinary Nurse training practice) or Tier 3 (veterinary hospital) levels have to practice some form of clinical audit. At the current time this is very broadly defined as " a system for monitoring and discussing the clinical outcome of cases and acting on the results", but the RCVS have indicated their intention to increase the importance of the measurement of clinical performance within the scope of these Standards in the course of time (see www.rcvs.org.uk).

The *Veterinary Record* has published two issues in conjunction with the British Medical Journal containing commissioned articles on subjects appertaining to veterinary/ medical co-operation. I co-wrote an article entitled "Veterinary Clinical Audit: learning from the medical profession" (Viner & Jenner, 2005) with Dr Chris Jenner, a GP and honorary senior lecturer with Imperial College. Dr Jenner had

presented a talk on medical audit at the SPVS Roadshows that I had organised, which delegate surveys had shown to be particularly warmly received, because it demonstrated just how dramatic the effect of performance measurement under the new GP contract (HMSO, 2003) had been upon the delivery of service, giving an indicator as to what could be achieved in our profession.

My review of the veterinary literature has illustrated that there is still very little veterinary experience of clinical audit, certainly as formally recorded. Compared to the wealth of information on the human side, there is almost none from sources within veterinary practice anywhere within the English-speaking world.

2.2 Medical literature

2.2.1 Overview

It is fortunate that the National Institute for Clinical Excellence has produced "Principles for Best Practice in Clinical Audit" (NICE, 2002). This hefty document has been produced by NICE in collaboration with the Commission for Health Improvement, the Royal College of Nursing, and the Clinical Governance and Research Department from the University of Leicester, and comprehensively covers the topic from the human standpoint. It can be downloaded free of charge via the NICE website at <http://www.nice.org.uk>. It contains a wealth of information beyond the scope of this review, but it has enabled me to compile answers to the first of my research questions: -

What is clinical auditing?

The document sets out an official NICE definition of clinical audit: "*A quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structure, processes and outcomes of care are selected and systematically evaluated against specific criteria. Where indicated, changes are implemented at an individual, team or service level and further monitoring is used to confirm improvement in healthcare delivery.*"

Within my MSc dissertation (Viner, 2003), I paraphrased this definition to produce my own that is directly applicable to veterinary general practice:

"Clinical Auditing is a quality improvement process in clinical practice that seeks to establish protocols for dealing with particular problems, based on documented evidence when it is available, monitoring the effectiveness of these protocols once they have been put into effect, and modifying them as appropriate. It should be an ongoing upwards spiral of appraisal and improvement."

I have found that this definition has stood up reasonably well to challenge since I proposed it, except that a focus group discussion organised by Peter Brown, a member of my MSc group, suggested that the term "protocol" should be replaced with "guideline". This discussion formed part of his MSc research looking at the definition of terms used for audit, and was carried out within the MSc group itself. It suggested that the term "protocol" was perceived as being an inflexible rule that had to be followed, and could only be changed retrospectively as part of a review process. The term "guideline" was seen as being more user-friendly, and implied that it was there to assist the clinical process rather than restrict it, and so was more likely to be acceptable in terms of impinging upon professional freedom. Andrew Spooner (2004) discusses the hierarchy of terminology, citing four stages from education, through guidance and guidelines to protocols, with expectation of compliance being correspondingly greater for each step. He also warns of the dangers of guidelines or protocols that do not have the wholehearted backing of the clinicians that are supposed to follow them.

I have learnt from my own experience and from facilitating groups of delegates in workshops at the SPVS Roadshows that the most difficult step in setting up the audit process is defining and measuring specific criteria. On reflection, I do not feel that the phrase "*monitoring the effectiveness of these protocols*" emphasises this process of measurement adequately, so I have revised this to "*measuring the effectiveness of these guidelines*".

I therefore propose that my original definition be modified to:

Clinical Auditing is a quality improvement process in clinical practice that seeks to establish guidelines for dealing with particular problems, based on documented evidence when it is available, measuring the effectiveness of these guidelines once they have been put into effect, and modifying them as appropriate. It should be an ongoing upwards spiral of appraisal and improvement

This can be summarised schematically, which helps to emphasise the cyclical nature of the process:



The definition of the terms used within the audit process is important to avoid confusion. Donald and Sally Irvine give a clear explanation of the use of the terms "criteria" and "standards" in Chapter 6 of *Making Sense of Audit* (1997).

"The term criterion is used to describe a definable and measurable item that describes quality, and which can be used to assess it..... A standard describes the level of care to be achieved for any particular criterion."

The first definition is fairly obvious, although care needs to be taken that when the term is used within the context of clinical audit, it is really used to describe the audit criteria, and not others, such as inclusion criteria. Morrell and Harvey (1999) use the acronym DREAM to remind us of the factors that need to be considered when selecting our audit criteria:

- Distinct
- Relevant
- Evidence-based
- Achievable
- Measurable.

The second definition is even more fraught with danger, because it is commonly used with a very different meaning: "The standard of my work" is what I am currently achieving, whereas "The standard of my audit" is the target that I am aiming for. The NICE guidelines recognise this issue, and although they define standards in similar terms, say "For clarity, this book uses... the phrase 'level of performance' rather than the potentially more confusing term "standard." This seems sensible, and I would recommend the use of terms such "target" and "goal" or even "benchmark", although the latter has a slightly different connotation, being described as "*the comparison of business practices and performance levels between organisations in order to identify opportunities for making improvements*" (Grout et al, 2000).

There can be no doubt that those in charge of clinical governance within the NHS see clinical auditing as vital. In their introductory statement, NICE (2002) says "Clinical audit is the component of clinical governance that offers the greatest potential to assess the quality of care routinely provided for NHS users – audit should therefore

be at the very heart of clinical governance systems. Audit can no longer be seen as a fringe activity for enthusiasts – the NHS needs to make a commitment to support audit as a mainstream activity.” It has set out to do this by creating a favourable local environment for audit, and by using audit methods that result in real improvements.

The General Medical Council now advises all doctors that they “must take part in regular and systematic medical and clinical audit, recording data honestly. Where necessary, you must respond to the results of audit to improve your practice, for example, by undertaking further training.” (General Medical Council, 2001) Similarly, the NHS plan of 2000 has proposed mandatory participation by all doctors in clinical audit, and developments to support the involvement of other para-medical staff (Department of Health, 2000). This has now been incentivised further by the new GP contract (HMSO, 2003) which has provided a strong link between clinical governance and remuneration in primary care in the UK, to the point where GP’s can earn up to 30% more than they previously earned on the basis of points earned for meeting specific performance indicators. It has involved a direct auditing of computerised clinical data by Primary Care Trusts, providing a live online feedback of performance to practices, and required these PCT’s to audit the audit process itself, to ensure integrity.

According to the NICE document, clinical audits are usually carried out by audit teams involved in delivering the service in question. They often have the back-up of dedicated audit staff. Factors facilitating the process include: -

- Time – protected time needs to be set aside
- Resources – to ensure the work is properly funded
- Advice – including the selection of methods
- Training – in clinical audit methodology and planning
- Support – ongoing help on the use of the methods
- Ethos – staff should consider clinical auditing to be an integral part of their job
- Teamwork – so that the process is owned by those carrying out the audit and not imposed from above

The document outlines the selection issues to audit and of criteria to be measured, and the need to base protocols upon sound scientific evidence whenever possible. It describes methods of data retrieval, and the measurement of performance. It points out that the need for information should be considered when services are re-designed or new systems of work are introduced.

NICE explains that producing change within an organisation rests upon the balance between driving forces, such as national policy and patient demand, counterbalanced by restraining forces such as fear of increased workload, loss of control over work patterns, lack of resources and a rigid culture that is resistant to any change per se. Merely increasing the driving forces will stimulate an increase in the number or strength of the restraining forces, which have to be selectively alleviated if change is to take place.

It is considered essential that any improvement that is obtained by clinical auditing is sustained, and ideally, built upon. This relies upon reinforcing or motivating factors to support the continual cycle of improvement, the integration of audit into the organisation's wider quality improvement systems, and effective management. Within the NHS, the Commission for Health Improvement audits the clinical auditing process itself.

2.2.2 Measurement of performance

A paper by a team at the Department of Health Sciences at the University of York (Goddard et al., 2002), looked at problems facing anyone trying to measure performance in health care.

It poses the questions "Should we measure outcomes or the process, and how?" They are very relevant questions to consider when trying to set up a clinical audit in veterinary practice:

1) Outcomes represent the ultimate product of healthcare, as the goal is the patient's health status. They promote "whole system" collaboration within NHS, and nurture innovation and long term benefits rather than a "ritual" approach. They are, however, notoriously difficult to quantify, and to separate from other outside factors.

2) Processes, such as waiting time, which are easy to measure, and to incentivise. Poor performance on a process measure gives a clear indication of the remedial action required.

In practice, both processes and outcomes matter to patients, and good performance measurement systems should include measures of both. For example, the quality of clinical management of hypertension could be measured by the prescription of appropriate drugs (process), or long term quality-adjusted survival (performance), but a good intermediate measure of success would be maintenance of BP within acceptable bounds.

These factors are all very relevant to veterinary practice, and need to be taken into account by anyone attempting to introduce clinical auditing. In particular, we should bear in mind the recommendation from these authors regarding the need for team work rather than top-down external systems. This issue was discussed further by the MSc group, in light of its experiences in drawing together the results of their post-operative complication audits, where it was felt that outcome audits were of particular value in highlighting areas where there was room for improvement in performance, but that process audits were then needed to investigate how processes were being carried out, and to facilitate the introduction of guidelines to bring about an improvement (see Chapter 5 p21).

2.2.3 Further development of clinical auditing

There has been a move to balance the forces of the three major forces seeking to change the world of medicine, which are: -

- Evidence-based (EBM) – concerned with ensuring that strategies of proven clinical effectiveness are adopted
- Cost-effectiveness – pursued by health economists to ensure best value for their money
- Preference-driven – ensuring that patient and public preferences drive clinical and policy decisions

Jack Dowie, (1996) summarises the effect of these factors and proposes that Decision Analysis Based Medical Decision Making (DABMDM) is the correct method of balancing all the relevant criteria.

It highlights the separation of medical decision making from the practice of medicine. The parties involved in the decisions may be different from the person or people carrying it out. Decision analysis encompasses and seeks to balance not only sound EBM, but also the realism of health economists, who want to see a good return on their investment, and patients, who may have a different agenda.

I found this quote of his particularly thought-provoking:

"Practice variations research has prompted most change..... It has to be accepted as a result of this research that doctors do a wide range of different things when faced by the same presenting patient. The broad reaction following acceptance of these results was that there were three possibilities, depending on the condition and patient type. One possibility was that it didn't matter that doctors were doing different things because "nothing works". In this case those paying were likely to say "Please do nothing". Another possibility was that it didn't matter that doctors were doing different things because "anything works". In these cases those paying were likely to say "Please do the cheapest". The third possibility was that it did matter that doctors were doing different things, in which case some people were by definition getting inferior, inappropriate, or unnecessary care. In these cases both those paying and those involved with health care were likely to say "Please get your act together or we will do it for you."

The obvious weakness is that it could be argued that with the infinite complexity and variability of a mammalian body, and their particular circumstances, no two patients are identical, and it may be a long time before the art of medicine can be replaced by the science of decision analysis that is sufficiently advanced to take all the variables into account.

EBM is very much technical problem solving, whereas DABMDM sets it into the context of user values and cost, so EBM is problem focused, whereas DABMDM is decision focused, helping to make the optimum decision in all circumstances, even

where the questions or data available are imprecise. Randomised Clinical Trials (RCT's) are the cornerstone of EBM, but are not necessarily the be all and end all in guiding clinical actions.

This is relevant to the consideration of clinical auditing in veterinary practice, and gives power to the argument of those that feel an excessive dependence upon pure clinical data may help rather than hinder the improvement of patient care. Complex computer based programs are being developed to try and quantify the decision-making process that has to be followed in DABMDM (Cao et al, 1998), but this is still a long way off in veterinary medicine. We can simply conclude that factors other than clinical data should (continue to) guide our decision-making process, such as cost, and client expectations.

2.2.4 Investigating the effectiveness of the audit process

Although much advice has been written about medical clinical audit, with specialised journals publishing many outcomes, there is surprisingly little research that has actually examined the audit process itself, or objectively researched the optimum manner in which it should be performed. For example, the World Health Organisation report questioning "What are the best strategies for ensuring quality in hospitals?" concluded:

"There is little research assessing the effectiveness of one or more hospitals or national quality strategies that can be used to answer these questions. This lack of evidence does not show that strategies are not effective, but is rather due to the difficulty of evaluating interventions and of proving that the results are due to the strategy and not to other factors"

So there is plenty of published information about audits themselves, and the audit process, but very little that has actually analysed its effect. So to this extent, there seems to be not only a gap in the veterinary literature, but in the medical field as well. Johnston et al, writing in *Quality in Healthcare* (2000) did systematically review the literature on the benefits and disadvantages of clinical audit, perceiving (but not measuring) benefits such as improved communications, patient care, and professional satisfaction. The five main barriers he identified were:

- Lack of resources
- Lack of expertise
- Problems between team members
- Lack of planning
- Organisational impediments

He also identified what he considered to be the key facilitating factors:

- Modern records systems
- Effective training
- Dedicated staff
- Protected time
- Structured programmes
- Shared dialogues between purchasers and providers

As recently as 2005, Foy et al. identified that although audit could be effective in changing healthcare professional practice in an area such as the management of diabetes mellitus, the available evidence says relatively little about the detail of how to use audit most efficiently.

2.3 Managing change

"People do not resist change; people resist being changed." (Richard Beckhard)

Change management is in itself very relevant to my research project, both in order to effectively introduce audit into my own work environment, and in terms of my broader aims, of bringing about change within the veterinary profession as a whole. The importance of establishing a new culture to bring about change within the context of clinical governance was clearly recognised in Chapter 3 of a report produced by the School of Health and Related Research, which analysed the results of large series of seminars involving health care professionals around the UK (Rotherham and Martin, 1999). They quote one as saying *"Change is brought about by a complex interaction of belief systems, knowledge base, opportunity to act, availability of information and the capacity to change."* This is a major area of

business management in its own right, but I found two books particularly relevant to my area of interest:

In *Managing Change in Organizations* (1999), Carnall explains that effective change requires three things from those involved:

1. Awareness – an understanding of the vision and strategy
2. Capability – the skills and resources required
3. Inclusion – choosing to buy in because they believe in the benefits

If a change in clinical performance is desired, the clinical audit process can encourage the development of all three if it is carried out optimally. This emphasises the importance of creating an audit team, with all the team members “buying in” to the audit process because they have an active involvement in it, and sufficient control of the process to be able to direct it towards those areas where the benefits are most required. In line with Carnall’s thoughts, this is far more likely to happen if this is driven horizontally, at the point of service, rather than vertically, from management above.

To bring about changes to the profession as a whole, it is also important to ensure that these three requirements are met. Therefore, an integral part of my work will be educational, trying to ensure that veterinarians are able to understand that clinical audit can bring very significant benefits to their work, rather than just being a requirement that has to be met in order to satisfy a particular practice standard, and to try and ensure that resources to provide them with the skills that they require are available. This is already underway via my articles and Roadshows, and will be propagated further by the work of the clinical audit MSc group, which is working towards producing a definitive guide to veterinary clinical auditing for practitioners, and the development of a web-based resource to support them.

Carnall continues by outlining the blocks to change, which in outline can be:

- **Perceptual** eg difficulty in identifying the problem, information overload
- **Emotional** eg fear of risk, of lack of black and white, pre-judging outcomes
- **Cultural** eg lack of intuition, conflict with traditional values

- **Environmental** – lack of support, defensiveness, over-bearing managers
- **Cognitive** – jargon, inflexibility, lack of information

As is pointed out in the NICE guidelines (Nice, 2002), it is important to be aware of these obstacles when instituting an audit, so that they can be anticipated and overcome. Should the process of change fail due to such problems, it will be correspondingly harder to overcome them on subsequent attempts due to the inevitable cynicism that will have been engendered.

In *The Dance of Change* (1999), Peter Senge defines “profound changes” in this context as organisational changes that combine inner shifts with people’s values, aspirations and behaviours with outer shifts in processes, strategies, practices and systems. He proposes that it is not possible to effectively make profound outer changes without equally profound inner ones.

He continues to explain that training implies control but learning is *“enhancing capacity through experience gained following a track or discipline. Learning always occurs over time and in real life contexts, not in classrooms or training sessions”*

“The practice of organisational learning involves developing tangible activities: new governing ideas, innovations in infrastructure and new management methods and tools for changing the way people conduct their work. Given the opportunity to take part in these new activities, people will develop an enduring capability for change. The process will pay back the organisation with far greater levels of diversity, commitment, innovation and talent.”

Senge takes a somewhat idealistic stance when considering what motivates staff to maximise their potential within their workplace, and perhaps does not pay sufficient attention to the barriers to getting workers to “buy in” to the aims of the leaders of their organisation. Nevertheless, the importance of fostering an environment where work-based learning becomes ingrained within the organisational culture should not be under-estimated.

If we apply this to the audit process, we can see its importance as a management tool to enhance the all-important learning process within an organisation, for in the words of the former CEO of the General Electric Company:

"The desire and the ability of an organisation to continuously learn from any source – and to rapidly convert this learning into action – is its ultimate competitive advantage" (Welch, 1996)

Senge describes three steps to producing profound change within an organisation:

1. **Team building** – which requires the recruitment of pragmatists that have a practical approach to the required process
2. **Spread** – within the organisation, built on demonstrable results that benefit both the individuals concerned and the business as a whole
3. **Developing learning capabilities** – maintaining the maxim "This is the way I see it," rather than "This is the way it is", to encourage consensus rather than dogma

In order to help bring about the necessary changes, within my own workplace and within the profession of large, I have also recognised the need to study the role of leadership in bringing about such change. In recent years there has been an increased awareness of the importance of leadership, as distinct from management, in driving forward the process of change, as highlighted by John Storey (2004) in his book *Leadership in Organizations*. He succinctly highlights the differences between management and leadership in the form of a table:

Managers	Leaders
Are transactional	Are transformative
Operate and maintain current systems	Challenge and change systems
Accept given objectives and meanings	Create new visions and meanings
Control and monitor	Empower
Trade on exchange relationships	Seek to inspire and transcend
Have a short term focus	Have a long term focus
Focus on detail and procedure	Focus on strategic big picture

Storey goes on to explain how transformational leadership, which aspires to significant organisational change through engaged and committed followers, has four components:

- Individualized consideration (the leader is alert to the needs of followers and also takes care to develop them)
- Intellectual stimulation (the leader encourages followers to think in creative ways and propose innovative ideas)
- Inspirational motivation (energizing followers to achieve extraordinary things)
- Idealised influence (offers followers a role model)

He states that the component that most centrally captures the idea of transformational leadership is that of inspirational motivation, which is decidedly change-focused. He goes on to develop the theme that this involves a shift from supervisory to strategic leadership, and the creation of a learning organisation that encourages an experiential learning environment that is inherently capable of evolving to meet the changing demands of the working environment.

The structure of work-based learning that both the MSc and DProf offered by the National Centre for Work Based Learning have developed, provide an ideal model for encouraging the development of a professional learning organization. The work of my Doctorate group as a whole, encouraging the development of a postgraduate veterinary qualification based on similar principles, is part of the broader picture of encouraging a change in approach to learning in a conservative profession that up until now has generally taken a very traditional, didactic approach. I am hopeful that since my research comes from a sound practical base, it will help to provide the inspirational motivation that is needed to encourage the uptake of this new approach to the measurement of clinical performance. The development of the MSc group researching clinical audit also aims to create a "ripple effect" to increase awareness of the concept. I have endeavoured to keep the concept of transformational leadership in mind throughout the development of my project, both within my workplace and within the broader sweep of the practicing arm of the veterinary profession as a whole.

2.4 Summary

I have demonstrated that there is a profound lack of published information about clinical audit as it applies to veterinary medicine. There is a great deal that has been published in the medical field, but surprisingly little that has tried to objectively analyse the effectiveness of the process itself.

However, there is no doubt that clinical audit is perceived as a “good thing” by those responsible for managing the way in which NHS resources are used, and recent changes to the GP contract are already radically changing the relationship between performance and remuneration (Spooner, 2004). There is a wealth of information about how to carry out the process, although I have taken care to transpose it into the veterinary scenario with care, as the situations are not exactly parallel.

Chapter 3 methodology

"If someone tells you in good faith that something is true, you should always assume that they are right. The problem is to find out what it is true of." George Miller

My Research Aim is to investigate the practicality and effectiveness of introducing clinical audit into veterinary practice. This is being carried out as part of a broader purpose to provide a framework for the introduction of clinical audit to the veterinary profession. I have concentrated on small animal practice, because that is my own area of expertise, but propose that the principles that I have investigated are also applicable to a large degree to other branches of veterinary practice.

My work takes place within two scenarios:

A: An action research (see Section 3.4) project studying in depth the introduction of the audit process within my own veterinary practices

B: An external validation of the conclusions of my action research within a broader subset of veterinary practices

The sections in this chapter deal with:

- 3.1 Epistemology
- 3.2 Research questions
- 3.3 Literature review methodology
- 3.4 Action research methodology
- 3.5 Research tools utilised
- 3.6 Research validity and triangulation
- 3.7 Focus group methodology
- 3.8 Questionnaire methodology
- 3.9 Graphical summary of data processing

3.1 Epistemology

Research can be considered to be deductive, where a working theory is tested by experimental research, or inductive, where information is gathered, and then a theory developed to explain the data. It is also possible for these to be combined, so that data is gathered and inductive reasoning used to develop a hypothesis, that is then tested by deductive reasoning (Gray, D 2004). This author also outlines the difference between basic and applied research, with the former aiming to test generalisability principles, whereas the latter aimed more at solving problems that are faced in a specific situation. However, this is a continuum, rather than a clear division, and it is possible for a research project to bridge any gap:

"Most common research projects at MU are evaluative studies of systems cultures and practices in the workplace. The most advanced engage in praxis whereby a critical examination of the theory and practice issues in change. Thus WBL can generate knowledge as well as apply it." (Portwood and Costley 2000).

The importance of work-based research is also emphasised by Eraut (1994):

"A much broader framework is needed for studying the creation of professional knowledge, and the situation looks very different if we move the academic researcher from the centre of the Universe. First we notice that a new knowledge is also created by professionals in practice, although it is often of a different kind from that produced by researchers."

He goes on to rue the current lack of work-based research:

"The knowledge-development potential of practitioners is under-exploited.... Much of their knowledge creation is particularistic, transferred from one case to another only by associative or interpretative generalization. Further reflection and discussion can enhance the knowledge derived from case experience and organise it in ways that encourage its further development. But there is no tradition of engaging in such behaviour in most professional work contexts, and knowledge development receives little attention in the action-orientated environment. Moreover, communication between practitioners is such that only a small proportion of newly created

knowledge gets diffused or disseminated. Thus there is no cumulative development of knowledge over time: the wheel is re-invented many times over."

I have approached my project clearly from the role of a worker-researcher, with the deductive stance that the introduction of clinical audit into veterinary practice is desirable. Indeed, it would be unethical to both myself and my practice to introduce the concept into my own workplace if I did not start with the proposition that the concept was sound, based upon what I already knew about it before commencing. Of course, I set out my enquiry with a sufficiently open mind to allow me to retrospectively review the evidence that I accumulated, and attempt to make an objective estimate of its worth, and so influence its future application, both within my own work environment, and possibly within the profession at large. The reflective practice that I have developed from the MU/PDF work-based MSc as part of the SPVS MSc group, continued with the reflective development encouraged in the earlier modules of the DProf programme have greatly helped me to view my own professional work in a reflective manner.

Being actively involved in the application of audit as a worker-researcher has enabled me to gain an understanding about the application of the process that would be much harder for an outsider to apprehend. For example, I have personally experienced how important it is for the clinician to "buy-in" to the clinical benefits of guidelines that have been instituted, before I have been able to wholeheartedly promote them to my clients.

There is no doubt that my project is fundamentally applied research. My claim is that a concept such as clinical audit can only usefully be researched within a work-based framework, for to remove it into an experimental framework would invalidate any conclusions that could be drawn. As Bell (1999) states: "*[Action research] aims to feed practical judgment in concrete situations, and the validity of the 'theories' or hypotheses it generates depends not so much on 'scientific' tests of truth, as on their usefulness in helping people to act more intelligently and skillfully. In action research 'theories' are not validated independently and then applied to practice. They are validated through practice.*"

As my opening quote to this chapter infers, the results of the action research project carried out within my practice are valid, but only within the context of my own workplace. I may make the logical deduction that the results are applicable to a broader range of veterinary practices, but will always lay myself open to the charge that they are unique to my own environment – the effect of my own influence and enthusiasm for the subject is just one example of an objection that could be raised to any claim I may make for generalisability. My work-based project has the advantage of being in-depth, but I have triangulated my findings and broadened their validity by testing some of my key findings with wider groups of practicing veterinary surgeons. It could still be justifiably argued that these groups represent self-selected enthusiasts for the subject, and that my findings are still not representative of the effect that clinical audit may have if introduced across the whole of the profession. I am content to rest with this objection, and argue that, at least, my work has demonstrated what can be expected from clinical audit when applied by this significant sub-set of the profession, and that this is sufficient to form a sound basis for making some future decisions about its further application. Had I sought views from a random cross-section of the profession, it would have been far more difficult for me to investigate in-depth issues since most of the cohort would not have had any direct experience of the audit process.

I have taken great care to ensure that the advantages of my position as a worker-researcher are not negated by the potential disadvantages that can be associated with that stance. I have already described the steps that I have taken to try and maintain an objective viewpoint, and have been helped in this by my Doctoral supervisors. I have also described how I have triangulated my results to test whether the same conclusions are reached using different methodologies.

My position as principal of the practice where I have carried out my action research could potentially lead to an ethical conflict with my employees, who have also acted as co-researchers. I have scrupulously followed the PDF/MU ethical guidelines, and have brought in outside assistance to carry out anonymised interviews investigating attitudes to the audit process before and after the process was put in to place. This was designed to help my practice team give free vent to their feelings on the subject.

3.2 Research Questions

After a thorough study of the background literature, and considerable reflection about what I can reasonably hope to achieve within the constraints of my Doctoral research project, I have formulated the following research questions:

1. What is clinical auditing?
2. What areas of clinical veterinary practice are best measured, and how?
3. What steps does a practice need to take to set up clinical auditing protocols?
4. How best to record and retrieve data
5. How best to set and compare standards
6. How do the veterinary and support staff feel about the process?
7. What are the benefits of introducing clinical auditing into a veterinary practice?
8. What are the problems with introducing clinical auditing into a veterinary practice, and how can they be overcome?
9. What is the cost/benefit analysis of clinical auditing ?
10. Is clinical auditing a practicable and effective means of maintaining a high standard of veterinary general practice?

3.3 Literature review methodology

My results of using this research tool has already been described in Chapter 2. It has been utilised to set my research into context, and more specifically, to discover the answer to my first research question: "What is clinical auditing?". There is wealth of detailed information about audit within the medical profession, and I have attempted to sift out the most salient information to investigate how it applies to the veterinary scenario, and to try and learn from the lessons that our sister profession has learnt over the past couple of decades.

The main tools that I used to search the literature were medical databases such as Pubmed, Google and Google Scholar, and the expertise of the staff in the Wellcome Library at the Royal College of Veterinary Surgeons – sometimes the database of the human mind can unearth information that more technologically based search engines can miss. The initial search terms that I used were "clinical audit" and "clinical governance", and then followed up information trails that opened up by looking through the references for each article that I found. Members of my Doctorate group and my academic advisors were also very helpful by making me aware of relevant information when they happened to find it.

There is a great deal of web-based information about clinical audit in the medical field, and the main website that I investigated were:

The National Electronic Library for Health	http://www.nelh.nhs.uk/
The Healthcare Commission	http://www.chai.org.uk/
National Institute for Clinical Excellence	http://www.nice.org.uk/
Centre for Health Evidence (Canadian)	http://www.cche.net/
The Cochrane Library	http://www.nelh.nhs.uk/cochrane.asp
NHS Clinical Governance	http://www.cgsupport.nhs.uk/

There are no veterinary journals that focus on clinical governance, but there are several that cover that area in the medical field, particularly Clinical Evidence, which is dedicated to evidence based medicine. I used the Archway healthcare library at Middlesex University and the library of the Royal Society of Medicine to browse through such publications and get a feel for what was out there, following up relevant articles when I found them.

I have fully investigated the sphere of knowledge within veterinary medicine, and more selectively sought out the most relevant areas of work on the human medical side. This has enabled me to examine what has already been carried out within my field, and to set boundaries for my research. It has expanded my personal knowledge of the subject, and enabled me to carefully define terms that are used in my research.

I have also been able to demonstrate that my research into the introduction of clinical auditing into veterinary practice is unique. This limited the extent to which I can draw upon existing research designs on which to base my own studies, but I have also extensively read and applied references relating to the research methodologies that have been used.

3.4 Action research

I used action research as my research methodology to investigate the effect of introducing clinical audit into my practice, although as I will illustrate, rather than a single methodology, the technique is more a description of the environment in which a range of different underlying research tools may be applied. I shall outline what action research involves, the philosophy behind it, why it is particularly suitable for a project such as mine, its limitations, and the precautions I took to reduce bias:

As described by Gray (2004), action research symbolises much of what modern research is about – analysing the world, but also trying to change it. It addresses real world problems, with the action researcher directly involved in the research process as a change agent, devoted not only to studying organisations and processes but also to improving them. Gray goes on to explain that action research is Gestaltist in origin, seeing issues as only being understood not through the study of a single variable, but within a holistic, complex social system. In a similar manner, Coghlan and Brannick (2001) summarise action research as “focusing on simultaneous action and research in a participative manner”. Therefore, the aim of action research, as shown by Stringer (1999) is not to present universal answers to a problem, but to reveal different truths and realities held legitimately by different individuals and/or organisations – the precise situation within my veterinary practice. Identical information will be interpreted in different ways, dependent upon previous experience, worldview, and culture. Action researchers therefore aim to “*develop a context in which individuals and groups with divergent perceptions and interpretations can formulate a construction of their situation that makes sense to them all – a joint construction.*” The research process itself may perform the function of “organisational problem solving” as summed up by Hart and Bond (1995) as enabling an organisation to “*work through conflict by a therapeutic process underpinned by action research*”. This makes the research process of great potential benefit to the process of developing my workplace into a learning organisation, which is considered to be a key factor in successfully competing for business, outlined by Peter Senge (1990).

Gray (2004) outlines three characteristics common to all action research investigations:

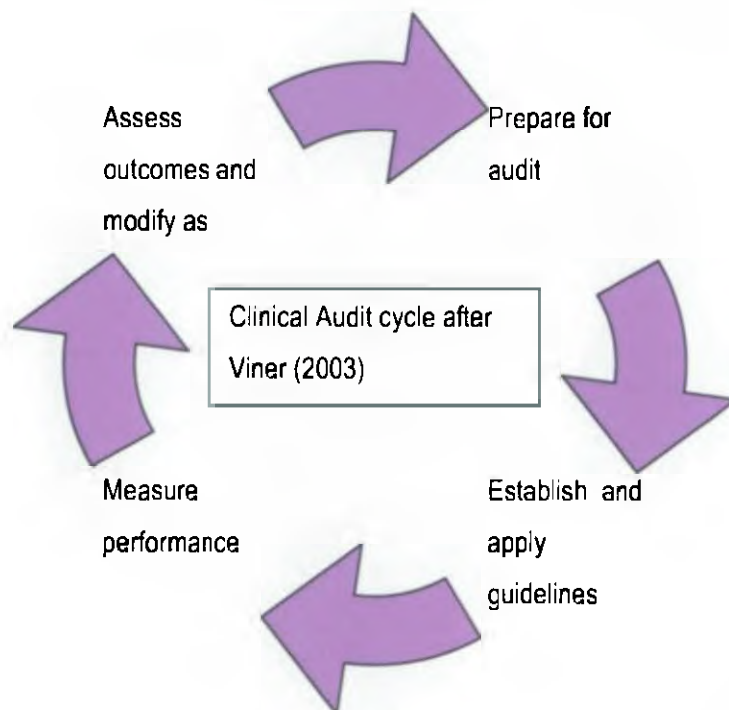
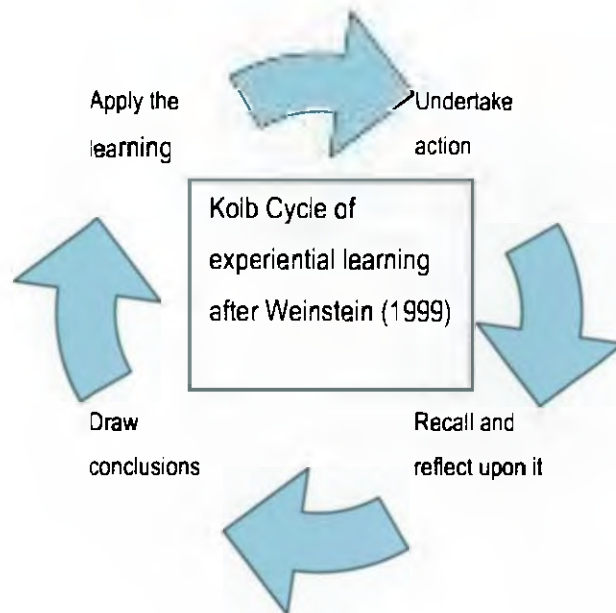
- Research subjects are themselves researchers, or involved in a democratic partnership with a researcher
- Research is seen as an agent of change
- Data are generated from the direct experience of research participants

Action research can be participatory, involving an egalitarian process of reflection, social learning, and the development of critical consciousness; external, where the researcher may be independent of the professional context but work alongside them; or as in my instance, insider, in which managers are involved in action research within their own organisations (Zuber-Skerritt, 1996).

Relevance of action research within my own context

Insider action research is very well suited to health research in general (Morton-Cooper, 2000) and my project specifically, because it examines a real life situation, and tries to bring about change, rather than an experimental methodology, which seeks to isolate one particular variable and study the effects of varying it in a statistically valid manner. It also acknowledges that the same principles and information may legitimately be handled in different ways within different organisations, but that there is nevertheless a great deal that can be learnt by comparison between them. For example, whereas within a single, large organisation with many sites it may be considered desirable to implement an inflexible system of operation with clearly defined operating procedures, within the context of a more heterogeneous group of organisations, there may be good reasons why different approaches may be taken to solve the same problem. Carefully planned and validated action research is nevertheless able to produce general guidelines that can be usefully taken on board and interpreted as best applied locally.

In this, action research is remarkably similar to the clinical audit process itself, since both are based upon the Kolb cycle of experiential learning:



The limitations of insider action research that need to be considered within the context of this project, are:

- It may be difficult for the insider-researcher to maintain a sense of detachment, and to cross existing departmental boundaries. This can lead to bias.
- Action research is a very powerful tool for bringing about change within an individual organisation, but has poor generalisability, so it cannot be assumed that the conclusions can be applied to any other similar organisation.

Careful reflection will help to reduce bias, and an outside researcher was brought in to assist with the interview process to further reduce it. Some of the research tools that are used are quantitative rather qualitative, so should be less prone to bias, although the amount of quantitative data generated will not necessarily be sufficient to stand up to rigorous statistical analysis. This will also reduce the generalisability of the results.

I have also had to recognise the potential conflict arising from the fact that I am the employer of the co-researchers working within the action research project, which raises ethical issues of the power balance between us. Practice members were given the free option to partake in the project or not, and had to give their consent in writing once they understood what was involved. It was also made very clear that there would be no attempt to pinpoint blame or any recrimination on the basis of the results. Whatever was said, or even documented, I had to remain sensitive to the fact that those involved in the project may react in a different manner when producing data that they know will be analysed by their employer. However, it could also be argued that this potential conflict mirrors one that can always exist within the context of the audit process, with the potential for a conflict between the interests of the patient, the clinical team, and the employer.

3.5 research tools used for the action research project

Action research is not a single methodology, but rather an over-reaching description of a process that makes use of a variety of research tools. Within my action research project I have used the following research tools:

3.5.1 Numerical data analysis

Each of the clinical audit projects carried out within my practice had to define specific criteria that could be measured, and the audit process was designed to try and use this technique to identify a change in performance. I have then gone on to use that data to try and estimate a cost:benefit analysis where it was relevant.

I have therefore used numerical data analysis as part of my research, but I have chosen to use this terminology rather than quantitative data analysis. This is because the quantity and quality of the data would not stand up to quantitative data analysis using traditional mathematical tools, but is rather used to illustrate trends that I have identified within my workplace. This does not invalidate my results, but greatly reduces their generalisability – so if putting a certain change into effect has produced certain results in my own context, I cannot claim that the effect would be the same in another scenario.

This illustrates an important characteristic of clinical audit: it is not practice-based scientific research. When helping participants to design simulated audits in the various workshops that I have organised, I have discovered that this is one of the most common pitfalls. As veterinary students, we are trained as scientists, with a very positivist view of our world. This leads us to be instinctively drawn towards valuing quantitative rather than qualitative data. Those new to the audit process will therefore very often start to design what amounts to a piece of in-practice research rather than an audit, and then fall down when it comes to analysing the data statistically. I consider that the aims of audit and research are fundamentally different: audit is a tool to bring about an improvement in the delivery of the clinical service within our own personal working environment, whereas research is designed to answer a research question in a manner that gives it some generalisability.

So although I am looking at numerical data, I have analysed it qualitatively, without any effort to apply any statistical tests, to give me a feel for the effect that the audit process is having upon my performance. I have demonstrated some degree of generalisability by triangulating my conclusions against those of other veterinary practices that have been involved in clinical audit.

3.5.2 Interviews

The practice team involved in the audit process were interviewed before any audits commenced (although they had been given background information on what to expect – see Appendix 1).

The interviews were carried out by Chris Whipp, another member of my Doctorate group, and the responses anonymized, in order to reduce bias. Interview techniques have been outlined by authors such as Miles and Huberman (2002) and Holstein J & Gubrium J (1995).

The interviews were divided into two stages: the first were closed, and asked respondents to score their answers to some specific statements on a scale of 1 to 6, from disagree strongly through to agree strongly. This was designed to give some quantification of attitudes to the process, and how they changed during the course of the audit process.

The second part of the interview asked three open questions, that gave the respondents an opportunity to air their feelings about the process more freely. I have relied upon the experience of Chris Whipp (who has also completed the SPVS MSc and is now working towards a Doctorate) to provide a summarised transcript of their responses, and I have then interpreted the data that has been received.

The options for data recording are laid out in Blaxter, Hughes and Tight (2001). The most appropriate technique in my circumstances was for the interviewer to take notes at the time of the interview, as well as making a tape recording, and then produce an transcript that summarised the salient points of the interview. As described by Miles and Huberman (1994), it is not uncommon for the initial stages of data filtering to take place at the time of the interview, and again when the transcript is being made.

3.5.3 Reflection upon action

Data was gathered from a variety of sources whilst the audit process was being carried out. Regular practice audit meetings were held and minuted, as were the meetings of the clinical audit MSc group and my Doctorate learning set. Reports on

the in-house audit process itself were produced by the lead person for each audit in conjunction with me, and form the basis of the project findings section. Each were also asked to produce reflections on the process, and I kept a research diary reflecting upon developments throughout.

I have reflected upon this data, and drawn upon it when appropriate to help formulate my conclusions. Where this has been carried out, I have referred to the source data and the reflective process carried out. Reflection upon professional practice is a highly valid method of learning, as outlined by Eraut (1994) and Bowden and Marton (2004).

The work-based action research project produced a vast amount of data that had to be filtered down in stages, until it was in a form that could be tested. The following stages were used:

- Key information from the raw data in the form of reports produced by each of the audit team leader (which can be seen in Appendix 2) was extracted into each of the relevant Findings sections, and then analysed
- This analysis took the form of matching the project activity to the standard format of the audit cycle to see how well it matched each of the prescribed steps, and summarising key points that had arisen
- Standard headings were then used to draw up the information gleaned from each audit in tabular format
- These tables were then merged in section 5.1, so that the six audits could be cross-referenced against each other under each heading
- The key points were then extracted to give a list of conclusions from each heading

I used this process combined with my experience and training to filter, analyse, and synthesise the information and draw appropriate provisional conclusions, that I have then proceeded to triangulate with other methodologies.

3.6 Triangulation

This is the process whereby the validity of any research results can be improved by investigating the same research questions using different methodologies, and then comparing the results. In this way, I am able to identify bias, and claim greater generalisability than simply from one in-depth case study in my own workplace.

The aim of the overall study is to triangulate the results of the insider action research project with the views of other professionals that have ventured into the clinical audit process. This was carried out via:

- The clinical audit MSc group that I established to assist with the process of establishing a framework for the introduction of clinical audit to the profession at large. Each of the six members is running at least one common audit project, and some more than one.
- An electronic database of practicing veterinary surgeons that have attended one of the clinical audit Roadshows that I have organised, plus members of the SPVS online discussion group.

As described by Denscombe (1998), this use of multiple methodologies allows the researcher to visualise the problem from different perspectives, and if the findings corroborate, enhance their validity.

3.7 Focus group

According to Barbour & Kitzinger (1999), focus groups are group discussions exploring a specific set of issues. The group is focused in the sense that it involves some kind of collective activity, such as debating a set of questions. Crucially, focus groups are distinguished from the broader category of group interviews by the explicit use of group interaction to generate data. Instead of asking questions of each person, focus group researchers encourage participants to talk to one another: asking questions; exchanging anecdotes, and commenting on each others' experiences and points of view. Similarly, Powell et al (1996) define focus groups as "a group of individuals selected and assembled by researchers to discuss, and comment on, from personal experience, the topic that is the subject of the research", and this definition fits in perfectly with the MSc group that I chose to use. Morgan (1997) specifically mentions that focus group studies may be particularly useful in triangulating other forms of research.

Barbour & Kitzinger continue by saying that focus groups are particularly suited to the study of attitudes and experiences around specific topics and exploring how points of view are constructed and expressed. Wilkinson (1998) describes focus groups as being an especially good method for eliciting participants' own meanings – information about their experiences. This contrasts with the other methodology that I used for triangulation, a questionnaire, which is more appropriate for quantitatively defining certain predefined opinions.

Market research focus groups often work with between 8 and 12 participants, but Barbour & Kitzinger advise that this is too large for many sociological studies, with five or six being the preferred number. They state that statistical representativeness is not the aim of most focus group research, although research studies that use solely that methodology may run anything from three or four to over fifty groups. They see no problem with working with pre-existing groups that already know each other, as they are "the networks in which people might normally discuss (or evade) the sorest of issues that are likely to be raised in the research session and the naturally-occurring group is one of the most important contexts in which ideas are formed and decisions made".

Wilkinson (1998) has widely used, and published reports, on the use of focus groups in health research, away from its more traditional commercial niche. She finds focus groups to be “an ideal method for exploring people’s own meanings and understandings of health and illness.”. She outlines five areas in which focus groups have been used in health-related research, including the “*Evaluation and marketing of products and services*”. Rubin and Rubin (1995) describe the increasingly common use of focus groups to bring together “a *group of people that have experienced the same problem*”. They were primarily referring to sociological problems, but a synthesis of the approaches of Wilkinson and Rubin and Rubin leads naturally to my use of a focus group to bring together a group of veterinarians all facing the same problem of introducing a novel service improvement tool into their workplace and evaluating its effect.

This confirms the value of using my clinical audit MSc group as a “sounding board” to test the validity of my own experiences regarding clinical audit. The group size of six was ideal, and although in an ideal world I may have wished to be able to repeat the exercise with multiple groups, the single group was sufficient in light of the fact that it was just one of multiple methodological tools that I used.

An alternative approach that I considered was one-to-one interviews, and as explained by Barbour & Kitzinger (1999), it is important to consider the how the group context and broader cultural and institutional features operate to encourage or suppress the expression of certain points of view, although this cannot always be predicted in advance. The group had already bonded strongly, and as self-confident and well educated professionals, I was confident that they would inter-react freely, and in a way that would optimize the value of the data that was produced. As David Morgan (1999) says: “*The simplest test of whether focus groups are appropriate for a research project is to ask how actively and easily the participants would discuss the topic of interest*”.

Barbour and Kitzinger (1999) suggest that it is often useful to ensure that participants have ways of communicating their points of view outside of the group in case the group scenario inhibits them from expressing those views, and I fed back my analysis of the session and offered all of the group the opportunity to contact me by email after the session if they so wished.

According to Barbour and Kitzinger, although traditional research approaches encouraged researchers to present themselves as faceless, objective nonentities, this paradigm has now been challenged, although it is still important for the researcher to reflect upon how their presence influences the data collected. This is particularly relevant in my instance, as I was presenting the results of my work to them for challenge, and could have been seen as a figure of authority, or someone they were eager to please. My experience to date with the group had been that they were all very strong-minded independent professionals, well able to stand up for themselves and present their opinions freely, and so I decided to act as facilitator for the session. I took pains to explain at the outset that I was happy to have my conclusions challenged, indeed, I invited them to do so. I reinforced this during the course of the discussion by ensuring that I did not take a stance that suggested that I was defending my conclusions. I followed the recommendations given by Gibbs (1997) regarding the role of the moderator, asking open questions, gently challenging participants and only intervening either to probe for details or steer the conversation back onto course. I tried to ensure everyone felt they had a chance to express their views, and avoided showing any obvious approval or disapproval to what was said. I used a pre-prepared list of questions that summarised key conclusions from my action research project (see project activity), but allowed the conversation to drift into other areas if they seemed relevant.

I followed the advice of Barbour and Kitzinger and took notes during the course of the meeting, backed up with a tape recording of the discussions, which was then transcribed (see Appendix Four). I have also appended to this transcription some email correspondence that followed on from the discussions generated at the meeting. Race et al (1994) describe how the focus groups themselves can become a forum for change, both during the focus group meeting itself and afterwards. This was borne out by the clear consensus of my group that it had been a worthwhile experience, giving them a chance to consolidate much of the thinking that had gone on up to that point, and stimulate new thought in some key areas (see end of Appendix Four).

I was able to apply the experience gained from analysing the qualitative interview data collected as part of my MSc project (Viner, 2003) to the analysis of the data

gained from the focus group meeting. Although I did take some contemporaneous notes during the course of the meeting, I also made a permanent record of it using a digital sound recorder. This was subsequently transcribed into a document that contained all the major elements of the conversation, and the key points were then summarised from this document. Somewhat unusually for a focus group, I was able to validate this process by referring my conclusions back to the group, and obtaining their agreement that they felt it was a fair summary of their views. By including a transcript in the appendices, and checking back the output with the focus group, I was able to minimise any bias resulting from me, as a facilitator of the group in its normal mode, introducing any bias into my results.

The full transcript (see Appendix 4) was initially filtered down to a summary with commentary, that can be found in section 4.10.1, highlighting key points from the data. These key points were then taken forwards into section 5.3 where they were analysed and merged with the original conclusions of the in-practice audits to produce a further set of provisional conclusions in section 5.4 (see flow diagram at end of this chapter).

3.8 Questionnaire

The provisional conclusions reached by the process described above were then tested by means of a questionnaire that was sent out by email to a group of practicing veterinary surgeons and other support staff. This mailing list had mainly been formulated from attendees at three of the SPVS Roadshows that I had organised, and they had agreed that they did not mind being contacted in that manner when they passed over their email addresses. I was therefore not dealing with a random sample of veterinary practices, but with a subset that had already taken sufficient interest in the subject to attend one of the Roadshows, or had made contact in some other way. This was not a problem, because I was looking specifically for practices that had had at least some experience of the audit process, so that they were able to comment upon it, and this subset was more likely than a random sample to yield such responses. It was also circulated to members of the SPVS online discussion list, which has a bias towards veterinarians with an interest in practice governance issues.

The questionnaire was primarily used to test the hypotheses that had been formulated during the course of my practice-based research and focus study group, so was conducted at the end of my research process. I decided to design and circulate an on-line questionnaire using web-based software produced by a company called Questform (www.questform.com). This can be used free of charge, but by paying a relatively small subscription, it was possible to remove the accompanying Google advertisements, which were found irritating by some of the participants in the piloting process. An online questionnaire brought several advantages:

- It brought about speedy results, important because this was the final stage of the research process.
- It was inexpensive compared to the cost of printing and postage for a more traditional questionnaire.
- Data was collated directly into a spreadsheet, saving time and transcription errors
- The manner in which data is entered by the respondent can be checked by the program to avoid errors such as the insertion of multiple answers where only one is permissible.
- The format was likely to appeal to the target population, who were already likely to be familiar with the use of the internet and receive many questionnaires and other requests for information in the post.

There were few limitations in using this format, although once I had designed the form I discovered that it did not do quite everything that the company supplying it had claimed. In particular, I had hoped to automatically terminate the questionnaire part way through for interviewees that had no direct experience of the audit process. I was able to circumvent this by asking them within the text to quit the program at that point. Whilst it has to be accepted that using an electronic format will bias the sample towards those with familiarity with information technology, this is not likely to be significant within the context of this piece of research.

It is important that a questionnaire is well designed to maximise its reliability (the extent to which respondents in the same situation would give the same response) and validity (the extent to which the answers that are given and the "true" response). It was particularly important to try and minimise any bias in the

phraseology of the questions that could result from me posing the questions in such a way as to maximise the chances of getting the answers that I wanted. The fact that the questionnaire was online as opposed to face-to-face with an interviewer, made it particularly important to ensure that the respondent could complete it without any external prompting or assistance.

It was drawn up in line with guidance from standard references including Oppenheim (1992), Brace (2004) and Burton (2000). In order to try and achieve the most objective results possible, I took particular note of the following points:

- Phrasing the questions carefully so as to avoid posing "leading questions"
- Only asking one question rather than several inter-related ones that might have different responses
- Trying to avoid terms such as "often" and "usually" which can be interpreted in different ways by different people.
- Keeping the questions as simple, specific, and easy to understand as possible
- Minimising the use of jargon. Even when sampling a population of vets and support staff, jargon about internet usage or the audit process may confuse.
- Piloting the questionnaire thoroughly to show up any problems with its design.

Some of the questions were closed questions with a simple, dichotomous response, such as "Do you have Broadband internet access at work?". Others were simple questions, but allowed some additional free text answers, which could not be included in the quantitative analysis of the results, but could add extra qualitative data, as well as giving the respondent an opportunity to express their thoughts more fully. Although dealing with open-ended questions can be very time-consuming, according to Burton (2000) they can sometimes be the most important questions on the survey by offering important and unpredictable insights into human behaviour.

Some questions were multiple choice answers, and the software allowed me to design the form so that it would either only accept one option, or multiple options, as appropriate.

Many of the questions required the use of scaling techniques in the answers, giving the respondent the opportunity to select one of a range of answers that best reflect their own response to a statement. Frequently, I was presenting the respondent with a statement that reflected the answer that I had found to one of my research questions, and asking for their reaction – effectively saying “This is what I found, how does it correlate with your experience?”. In many instances I used well-trodden examples of Likert scales, which are commonly used in social science research (Brace, 2004; Burton 2000), and require the respondent to choose a response indicating varying degrees of agreement or disagreement to a statement.

There are several issues that need to be considered when this tool is used:

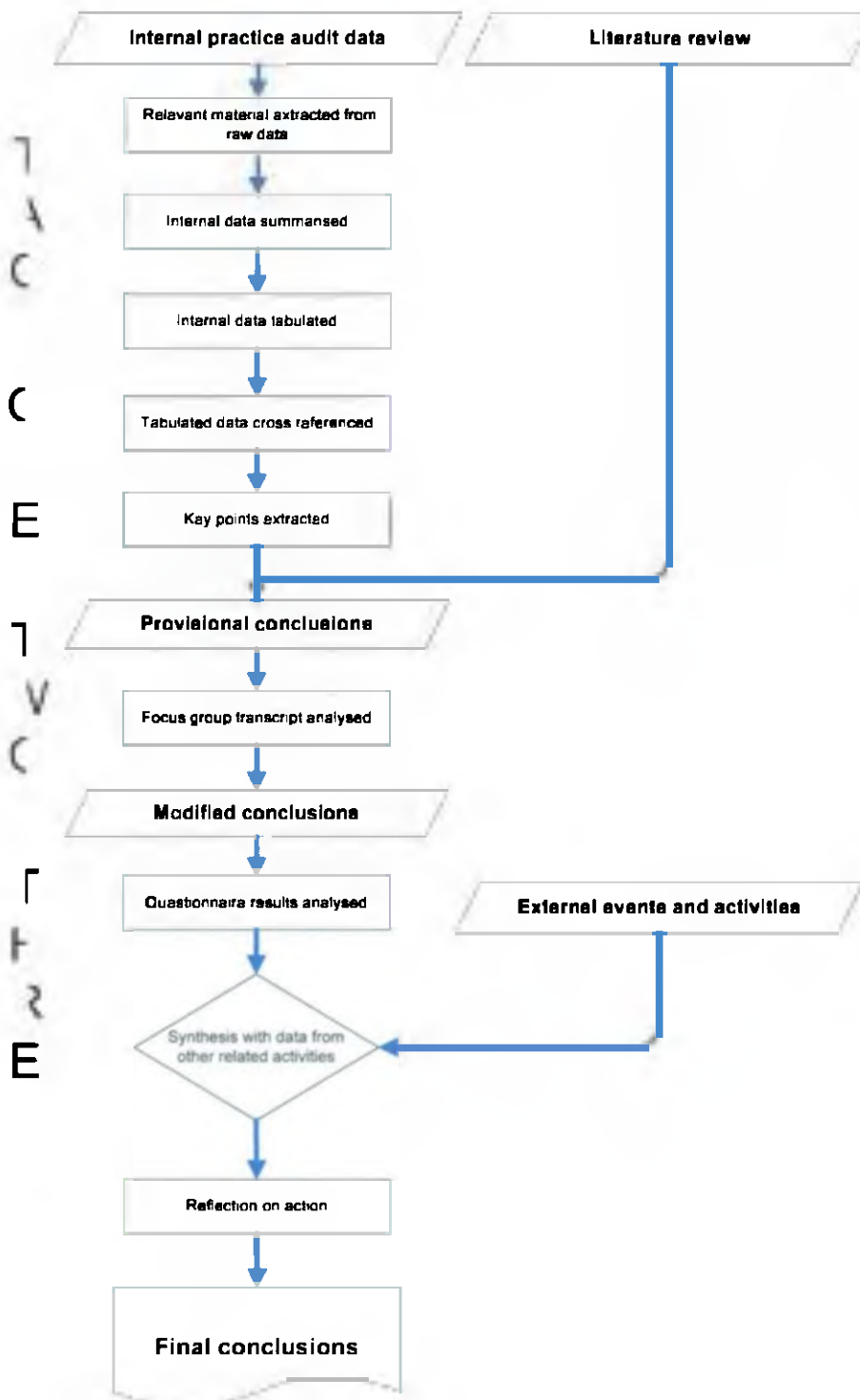
- Careful thought has to be given to what actually constitutes an unbiased scale of opinion.
- Should the scale have an odd or an even number of possible responses? An odd number will result in a natural bias towards a neutral response, whereas an even number will push the respondent into making either a positive or a negative decision. In most instances, I was happy to allow a five point scale with a neutral response.
- It needs to be considered for each question whether “don’t know” is an acceptable response. Since an online questionnaire can “force” a response to a question, in instances where factual answers were required, it was thought desirable to include this option.
- There is a natural bias towards agreeing with a statement, and towards the left-hand answer (Brace, 2004). This can partly be neutralised by placing the negative answers to the left.

The demographic questions were placed at the start of the questionnaire. Some researchers are of the opinion that they should be at the end, because many respondents find them boring and may be put off completing the questionnaire. On the other hand, having some short and very easy to answer questions at the beginning may help to draw the respondents in. In my instance, respondents with no practical experience of clinical audit are asked to quit the survey part way through, so it was essential that the background information was completed first.

I carefully considered the use of statistical software packages such as SPSS to assist with the analysis of the data. However, the design of the questionnaire has allowed me to obtain the answers to my research questions directly from the questionnaire, and there was very little extra useful information to be gained by a more sophisticated analysis comparing data between different categories of variable, which is the main use of such a software package within this context. I have therefore simply used the basic statistical functions available within Excel to analyse and display my results.

3.9 Summary flow chart of data analysis:

The use of a flow chart helps to visualise the process of filtering the data down from a large volume of disorganised information, through several stages, to a much more highly refined and organised set of conclusions:



Chapter 4 *Project activity*

4.1 The practice research environment

As already outlined, the primary part of my project activity involved the carefully monitored instigation of the clinical audit process into my own veterinary practice, using the principles already described for action research. The audit process had interested me during the course of my Master's degree, but I had purposely refrained from introducing it piecemeal into my workplace, because I wanted the option of being able to introduce it into a "clean" environment as part of my future research.

I established the practice in 1979, and has grown from a single-handed companion animal practice on just one site in the outer suburbs of North West London, to a group that employs five veterinarians over four sites, still within quite a close proximity to the original site. Two of these sites are self-contained units, with full surgical and hospitalisation facilities, and two are smaller consulting centres that are only open for limited hours during the day. I am still sole principal of three of the four sites, and an equal partner in the fourth.

Since I founded the group, it has concentrated on providing a high quality of service to a discerning section of the pet owning public, that are eager to obtain the highest standard of care for their pets. This has involved providing a high standard of facilities, but even more importantly, a dedicated and well trained team of veterinary and support staff. This has been reflected in a very stable team of veterinarians, all of whom have worked for me for several years at least, and in June 2003 the practice was awarded the Investors in People standard as a recognition of the importance that I place upon human resource management.

The practice has had computerised clinical records since 1987 – a time when what is now the norm was somewhat unusual. I have used four different practice management software systems over that time, and so have become quite proficient at their selection and installation (the installation of the latest having formed one of the RAL modules for my MSc). The Rx Works package that I now use has excellent facilities for the coding and recall of clinical data, which greatly assists the audit process. Whilst a recognised coding system will be essential to allow the efficient exchange and comparison of data between practices, my own in-house coding

system has evolved to cover most clinical diagnoses over the years, and is adequate for the running of internal audits. The identification and propagation of a commonly accepted system is forming part of the work that is being initiated by the clinical audit MSc group.

Clinical audit is more likely to thrive in an environment where the provision of a high quality of service is seen as paramount, and where staff training and team work are prioritised. To that extent, the environment where I am instigating my action research project is not typical of veterinary practice as a whole: it is purely companion animal; it is in an affluent part of the South East; and it is proactively managed by someone dedicated to the concept of providing quality care. However, it may be more typical of the type of forward-thinking practice that is likely to embrace the concept of clinical audit as a means of achieving a high standard of practice, and of providing the means of demonstrating to the staff and the clientele what is being achieved.

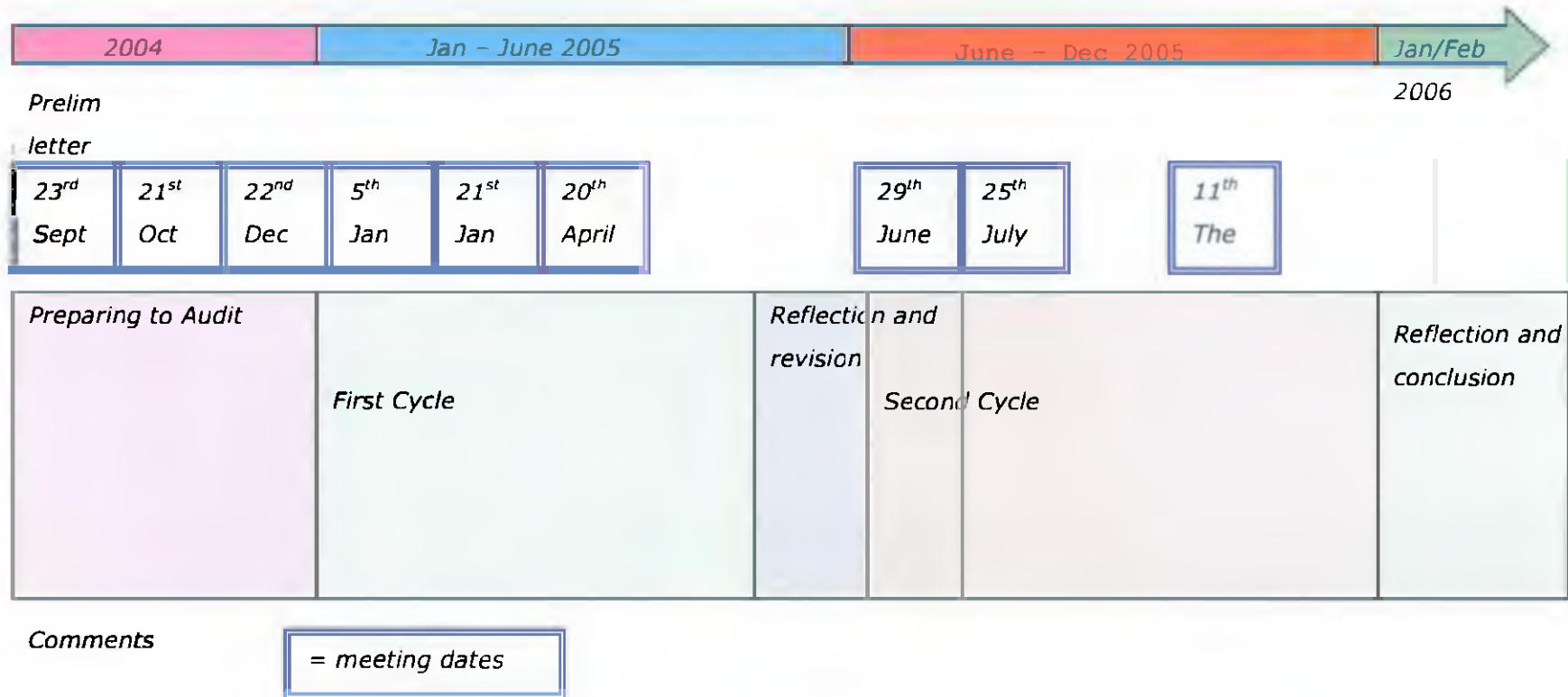
An audit team was established within the practice, consisting of the five veterinarians, three senior practice nurses, and the practice manager. The group met regularly, according to need, and minutes were recorded by the practice manager. The demands of the audit process meant that the veterinary, nursing and customer care staff all had to work closely together to achieve the desired objectives.

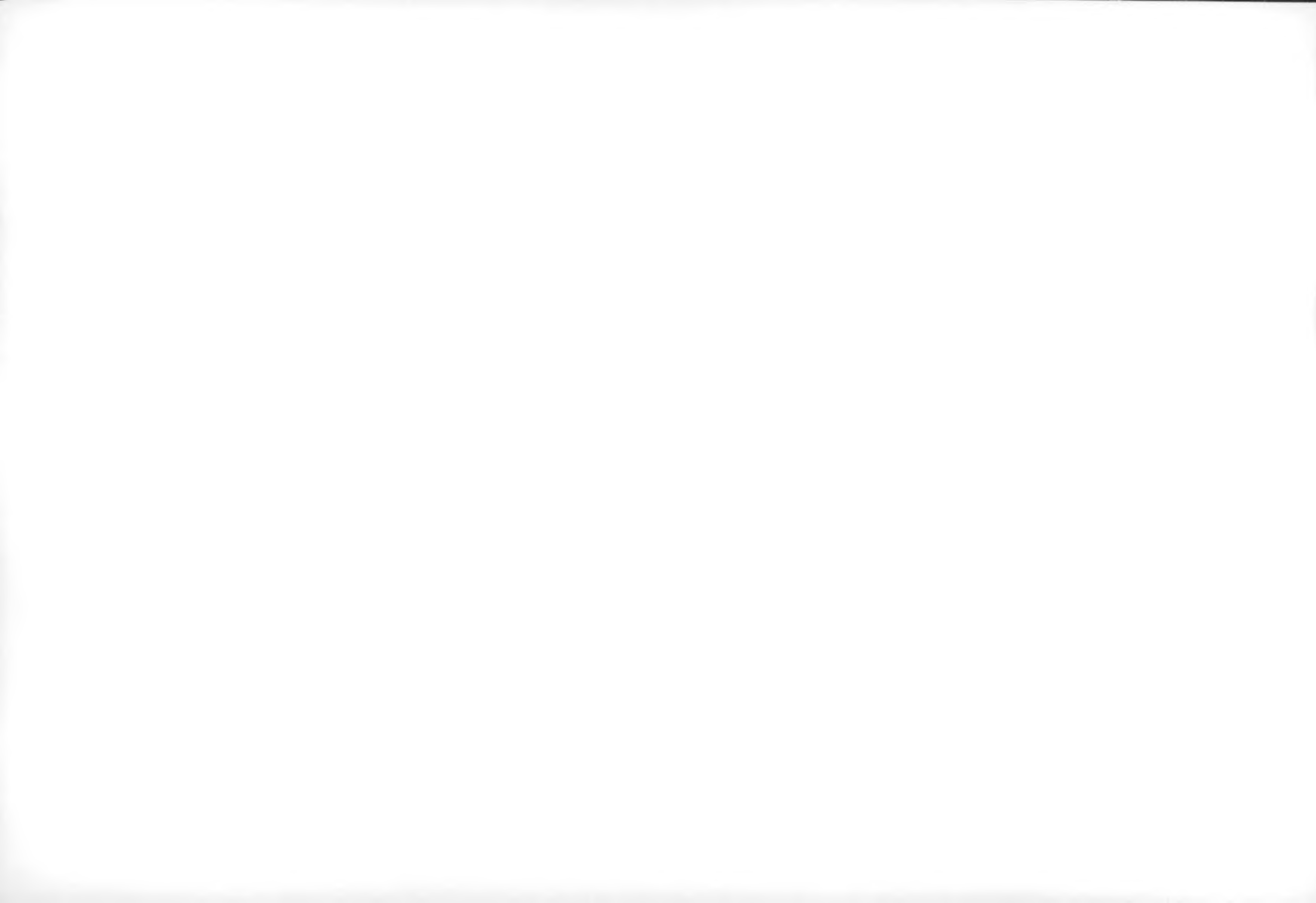
4.2 Practice audit design

Five audit sub-teams worked on a total of six different audits that ran over approximately a one year period, between January 2005 and late December 2006, although one of the audits was run for a much shorter period, as explained below. Each veterinarian was asked to oversee one audit, in an area that interested them, and bring that audit to meeting of the audit team for discussion. The nursing team also developed their own audit. An important part of the audit process was that all the guidelines were agreed by a consensus, so that all the clinicians felt some degree of ownership of each project.

The timeline for the project ran as follows:

Timeline for Blythwood clinical audit process



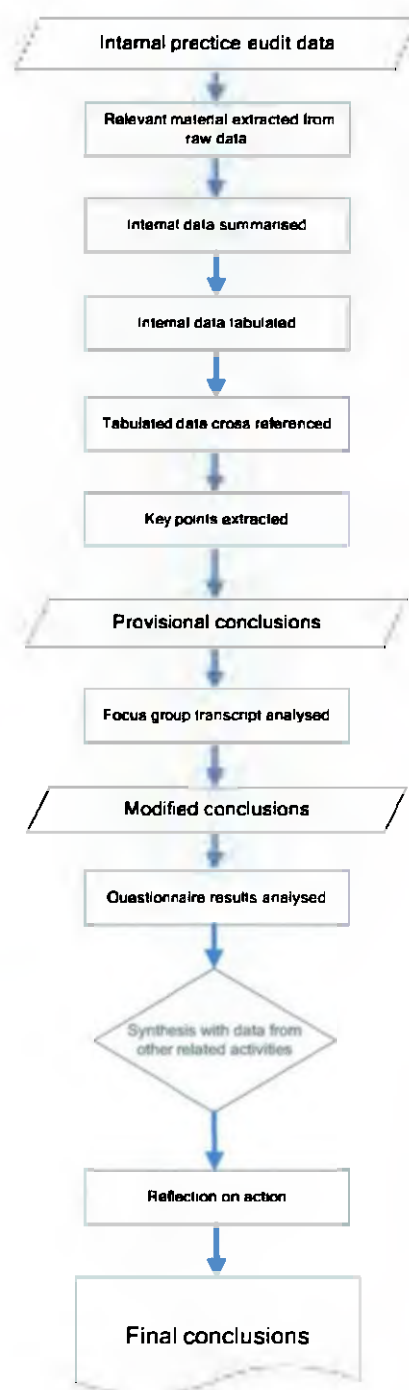


Chapter 4.2

An audit report was produced by the clinician leading that particular exercise, with feedback and input from me when necessary. They have been presented as data in their "raw" form in Appendix 2, and I have selected abstracts to appear within the body of this chapter, which are formatted with purple italics. In this respect, the other members of my practice clinical team have acted as co-researcher in my work. I have extracted text from their originals, but not edited it, so the views recorded are those of the clinician and not necessarily my own. Any comments that I have added are in black text rather than purple. The references they have cited are also their own, and are not included in my reference section at the end of this project report.

This chapter carries out the first three stages of the audit data processing, as seen on the flow chart to the right, on each of the areas of audit. They are drawn together for analysis in Chapter 5.

In addition to the audit reports themselves, additional data on the sociological impact of the introduction of audit to my work environment was gathered in the form of pre- and post- audit interviews of the team members, carried out by an independent researcher, and reflections on the process written at the end of the process by each person leading an audit.



The six audits and the results obtained were as follows:



4.3 Audit 1: improving the diagnosis of Congestive Heart Failure in dogs

The initial plan for the audit was agreed at the audit meeting of the 21st October 2004. It identified as an issue the fact that it was desirable to increase the number of dogs with suspected congestive heart failure dogs which undergo chest radiography, rather than simply putting them on medication without radiographic confirmation of the diagnosis.

The criterion measured was the percentage of dogs with suspected congestive heart failure that have had lateral and dorsoventral thoracic radiographs taken within two weeks of being seen by the clinician.

Methodology as laid out at the start of the audit:

1. EVIDENCE

It is well documented in the literature that radiography is of benefit in the diagnosis of cardiac disease. Not only can radiography reveal information about general heart size, it can also indicate signs of specific chamber and blood vessel enlargement, the presence and degree of any pulmonary oedema and also give information about any thoracic but non-cardiac disease which may or may not be significant.

For assessing evidence of left sided congestive heart failure, radiography is the method of choice (Dukes McEwan 2000).

References:

*Nelson and Couto (1998) Small Animal Internal Medicine Mosby Publishing
Dukes McEwan J, 2000 Canine Dilated Cardiomyopathy; Breed Manifestations and Diagnosis In Practice Volume 22, no. 9 pp520-530*

2. INCLUSION CRITERIA

DOGS should show some of the following signs suggestive of congestive heart failure:



syncope, heart murmur, cough, dyspnoea, tachypnoea, exercise intolerance, jugular distension, generalised ascites/hepatomegaly, muffled heart sounds, weight loss

OWNERS should be happy to comply with radiography +/- sedation (ACP/Buprenorphine) as the minimum diagnostic work up.

NB – in severe cases of suspected CHF where it is felt that radiography +/- sedation will be hazardous to the patient then the clinical condition of the patient must be improved before undertaking any diagnostics.

3. RECORD KEEPING

All new suspected CHF cases were coded as "congestive heart failure – provisional"

4. RETROSPECTIVE SEARCH

Key words will be used to search the practice database for retrospective cases of suspected Congestive Heart Failure, to establish what proportion had had their chests radiographed.

5. COMPARING RETROSPECTIVE RESULTS WITH THOSE FOUND AFTER THREE MONTHS OF THE AUDIT STARTING

We will look at the figures and see if, by implementing the audit, more dogs have lateral and dorsoventral thoracic radiographs taken.

6.CLIENT HANDOUT. I hope that by improving owner awareness and education through this audit we can achieve our aims.

Having decided to run this audit for three months only, and then retrospectively comparing back to an earlier three month period, the veterinarian running this project reported back to the practice audit meeting of the 20th of April 2005.

RETROSPECTIVE STUDY

In the twelve months prior to the protocol being in place the number of dogs diagnosed with, or on treatment for congestive heart failure was 24.

No. of dogs that had lateral and dorsoventral radiographs within 2 weeks of presentation to the clinic = 16

No. of dogs that did not have lateral and dorsoventral radiographs taken within 2 weeks of presentation = 8

Of the 8 dogs that did not have radiographs taken within 2 weeks the reasons for this are shown below:

Radiographs taken 6 weeks after presentation due to severity of clinical signs 1

2nd opinion cases where radiographs had been taken at the first clinic 3

Severe clinical signs and died soon after treatment was started 1

No obvious reason why radiographs were not taken 3

The 3 animals that had radiographs taken at another practice can be excluded from the audit, leaving 21 dogs in the study. Of the 5 remaining cases which did not have radiographs taken, 2 of them would have been radiographed within two weeks were it not for the severity of their clinical signs.

AFTER AUDIT PUT IN PLACE

After approximately 3 months the number of dogs with suspected congestive heart failure which had presented to the clinic was 6. All of these animals had both lateral and dorsoventral radiographs taken.

5 of the dogs had congestive heart failure, 1 dog had a primary pulmonary problem.

ANALYSIS

Percentage of dogs with suspected congestive heart failure which have either lateral or both lateral and dorsoventral thoracic radiographs taken within two weeks of being seen by the clinician prior to clinical audit protocol being implemented

$$16/21 = 76\%$$

(if we exclude the dogs which had severe clinical signs then the percentage is 16/19 = 84%)



after clinical audit protocol implemented

6/6 = 100%

It can clearly be seen that the aim of the audit (which was to increase the percentage of dogs with suspected congestive heart failure which have thoracic radiography within two weeks of being seen by the clinician) has been achieved. The increase is approximately 20%.

Client compliance was 100%. When it was explained the importance of accurate diagnosis and the clients were given the handouts, then they all seemed happy with the rationale behind radiography prior to treatment.

The benefits of radiography in suspected CHF are clear as shown in the evidence but also as shown in the results. One dog with suspected CHF actually had a primary lung problem, which would not have been diagnosed without thoracic radiography. Had treatment for CHF been started without radiography then this dog's condition may not have been detected.

The limitations lie mainly in the retrospective search. Given that during the 12months prior to the study we did not know we would be looking at cases of congestive heart failure and that it was essential these cases were clearly marked, then there may well be cases which were not found by the computer search. These cases may have used different keywords such as "pulmonary oedema", "dyspnoea", "lethargy", "weight loss" etc.

The prospective audit still relies on clinicians using the summary word congestive heart failure – (provisional) – in one of these cases this had not been done but I remembered the case. There is certainly a possibility that some cases may have been missed if the summary word was not used each time. I think that given everyone had their own audits, and I had been doing another audit during this period it was perhaps not at the forefront of everyone's mind. Regular audit meetings helped to remind everyone.

POSTSCRIPT

Following the initial audit period of 3 months the audit a check of the data was carried out to see if the practice had maintained the 100% record of performing

thoracic radiography on patients with suspected congestive heart failure within 2 weeks of being seen by the clinician

Results

Total number of new dogs with suspected congestive heart failure in April – November 2005 = 8

Number of dogs which had lateral and dorsoventral radiographs taken within 2 weeks of being seen by the clinician = 5

Percentage of dogs: = 62.5%

There were 3 dogs which did not have radiographs taken:

1 dog was very old, large and aggressive and after discussion with the owners it was decided to trial the dog on medication rather than have him into the surgery for practical and safety reasons, as well as respecting the clients wishes.

1 dog was owned by a client who for financial reasons could not afford to have the dog radiographed. The dog was radiographed about 2 months after CHF was suspected when it collapsed, and was started on CHF medication straight afterwards.

1 dog did not come in for radiography until 5 weeks after being seen by the clinician as the client did not bring the dog in despite repeated advice from the veterinary surgeons to do so.

By looking at the figures it is apparent that the percentage of dogs undergoing thoracic radiography has dropped from 100% during the first audit period to 62.5% during the second audit period.

In two of these cases client compliance (or lack of) was the only reason radiographs were not taken within 2 weeks of being seen. Both these dogs eventually had radiographs taken and were started on appropriate CHF therapy. In the other case

the aggressive nature and size of the dog, combined with the owners' and clinicians discussions meant that the dog was not radiographed.

ANALYSIS OF AUDIT ONE

Step 1: Prepare for the audit process

The clinician that initiated this audit had a specific interest in cardiac disease, and at the audit meetings was able to convince the group that it would be desirable to encourage chest radiography for all canine patients with suspected congestive heart failure, in order to most effectively further the diagnosis at an early stage. There were no great administrative barriers to overcome, other than an awareness by the clinicians that this was desirable. Because of the seriousness of the condition, it was expected that client compliance with any such recommendation for diagnosis would be good, but an owner handout was drawn up and made available on the practice management system to facilitate the process.

Step 2: Establish guidelines

The guidelines were simple: all cases that are clinically suggested as suffering from Congestive Heart Failure are marked on the computer when the visit is saved as "**congestive heart failure – provisional**" and arrangements are made to have dorsovental and lateral chest radiographs taken. The clinical signs that might lead to this provisional diagnosis were clearly laid out. Good evidence was provided to demonstrate that this was a useful way to approach such cases, even if there were anaesthetic or sedation risks involved. As part of our normal procedure, the owners would be issued with an estimate of the cost, and asked to sign a consent form to confirm that they have given informed consent to the procedure.

Step 3: Select criteria and measure performance

The criterion used is also very simple – either the dog had two radiographs taken within two weeks of the initial diagnosis, or it did not. Providing that the appropriate coding was used on the computer by the clinician at the time of diagnosis, the recall of data and the measurement of performance was straightforward. The lead clinician also carried out a data search on key words to check for compliance with the coding, and was able to pick up another one that had not been correctly coded.

Step 4: Assess outcome and maintain improvement

Since total compliance was reached at the end of the first three month period of the audit, it was decided that there was no point continuing with the audit, and the lead clinician went on to carry out a different audit into postoperative complications. Interestingly, a check was made to measure compliance with these guidelines after the official audit period had ended, and it had dropped back to a similar level to before the audit. It did seem that there might be some particular circumstances in the three cases involved, and two of the three cases were eventually radiographed, but it does also suggest the need to follow up on an audit to ensure a continuation of improvement, even if it seems that an ideal result has been achieved very easily. The decision not to continue with the audit cycle was a conscious one, but in retrospect, audits like this may still need to be repeated periodically to maintain staff awareness.

Summary

This was a very simple process-based audit that measured the number of dogs that were provisionally diagnosed with congestive heart failure and had their chest radiographed as part of the diagnostic workup. Evidence was produced from the literature to back up the assertion that radiography is the method of choice for assessing evidence of left sided congestive heart failure, and the clinical team were content that this was to be encouraged.

Having established the desirability of radiographing the chests of all suspected cases of congestive heart failure, this was encouraged by raising awareness amongst the clinicians, and providing client information to support their efforts. If the audit were continued for a protracted period, it would be important to reinforce that message regularly.

Our PMS allows for a "reason" to be coded at the end of each consultation, and the clinicians have been trained to get into the habit of selecting their closest estimate of a diagnosis from a drop-down list at the end of each visit. This has facilitated the process of requiring them to select "congestive heart failure - provisional" in appropriate cases, but in order to double-check that this is being carried out, it is also possible to search for other key words such as "dyspnoea" (laboured breathing) or "cough". The veterinarian supervising the audit was able to identify one case that had not been correctly identified.

The number of cases of suspected congestive heart failure identified by the audit was not great – 24 retrospectively over the previous 12 months, and 6 during the three month period of the audit, across all four sites. It is recognised that the retrospective survey may not have picked up all the cases, as they were found by “mining” the database for key words, rather than prospective coding. On the basis of the three month audited result, one might have predicted around 24 cases each year, which concurs with the figure that had been deduced for the pre-audit period.

The use of percentages to describe the proportion of patients that comply with the audit requirement is misleading when such small numbers are involved, as a change in just one or two dogs will result in a misleadingly large percentage change.

The results showed that 16 out of 21 dogs with a provisional diagnosis of CHF over the previous year before the audit was instigated had had their chests radiographed. This excluded three of the cases that were second opinions and had already been radiographed elsewhere, but not the two cases that were not radiographed because they were severely affected, on that basis that with our high-power x-ray equipment we can gain some sort of image with only a minimal amount of sedation. Compared to this, six out of six complied during the three month period of the audit, with no cases excluded.

Compliance with the requirement of the audit was excellent, perhaps because of its simplicity, but it has to be recognised that the number of cases involved is small. The benefit of having client information explaining the rationale for the procedure to clients was noted. Within the limited period that it was run, a clear improvement in performance was seen, to the point where it was felt it was pointless to continue to run it, as it had achieved all that it could. The veterinarian concerned then commenced working on the audit on post-operative complications. However, this suggests that compliance can drop quite quickly after an audit is completed, and repeating the audit from time to time would be likely to be beneficial.

TABULAR SUMMARY

	Comments
Choice of topic	The area for audit was important – an improvement in performance would result in a clear benefit to the patient. However, the results suggested that there was insufficient room for improvement in order to make it worthwhile carrying on the audit.
Choice of criteria	Very clear and easy to measure process audit
Evidence base	Good base of evidence for process
Standards used	Close to 100% compliance reasonable
Use of IT	Coding simple and effective but depended upon compliance by the clinician
Data validity	Errors on coding picked up with data search
Teamwork	All clinicians worked well together to improve compliance
Resources	Only required a small amount of time for data retrieval and analysis
Communications	Effective literature produced for clients. Guidelines communicated well to clinical team
Cost benefit	Clear benefit to owner and the effective treatment of their pet by encouraging the routine use of this diagnostic procedure. The cost of this procedure is around £200 plus VAT, so if all of the 21 cases seen over the previous year had been radiographed, instead of the 16 that were, approximately an extra £1,000 of practice income would have been generated.
Key points	<ul style="list-style-type: none"> • Need to select area for audit where there is expected to be room for improvement • If performance is deemed to be satisfactory, periodic re-monitoring is still advisable • Clear criteria and simple audits can be very effective • Basic computer coding is effective but needs to be double-checked by data mining where possible

4.4 Audit 2: management of canine pruritus

This audit was established because it was perceived that there was a need to establish and follow clear guidelines for the initial management of cases of pruritus (itchiness) in the dog. Pruritus is a common presenting sign with several possible underlying causes, and it was perceived that by adopting a more structured approach to the initial diagnosis and treatment, improved consistency and resolution of the clinical problem would be achieved.

Methodology as laid out at the start of the audit:

Newly presenting cases of pruritus are to be included in the audit. Cases with a history of chronic pruritus already on therapy or management are excluded. Cases presenting solely with inflammation and pruritus of the aural canals (otitis externa) are excluded. However cases with pruritus of the pinna are included. A systematic approach to the investigation and treatment of newly presenting cases of pruritus has been developed by a review of the literature and consultation with clinicians in the practice and this will be used as the basis for the clinical investigation and treatment of cases. Flow charts will be placed in each of the consulting rooms of the practice as an aid to clinicians.

Data entry was assisted by a computer macro that laid out the guidelines for the clinical approach to be taken at each visit, and clinicians were requested to use the summary word "pruritus" at the end of each visit in order to facilitate the recall of the data for analysis. A handout was produced to categorise the degree of pruritus as reported by the client which allowed a subjective assessment of the degree of pruritus at initial consultation and the change in pruritus at subsequent visits.

Cases were divided into diagnostic groups on the basis of the following criteria:

Sarcoptic mange: *consistent history and clinical signs and/or a positive ELISA test for Sarcoptes IgG or the finding of sarcoptes mites on microscopy of scrapings. Complete resolution of signs and pruritus following two applications of selamectin at 6mg/kg.*

Pyoderma: *clinical signs suggestive of surface or superficial pyoderma, and/or the presence of intracellular cocci on cytology. Complete response to cephalixin therapy at 20mg/kg q12 hours for 14-21 with no reoccurrence of lesions following cessation of antibiotic therapy.*

Flea Allergic Dermatitis: *history and clinical signs suggestive. Evidence of fleas found on animal or on coat brushings. Resolution of signs following appropriate therapy and flea control.*

Allergic/hypersensitivity Disease: *clinical signs and history suggestive of atopic/food allergic diagnosis. No response to ectoparasitic treatment or incomplete resolution or relapse of clinical signs following antimicrobial therapy for pyoderma and Malassezia dermatitis. Rapid effective response to anti-inflammatory doses of prednisolone.*

Anal Sac Impaction: *clinical signs and examination. Resolution of signs following evacuation and appropriate therapy.*

AUDIT FINDINGS

A retrospective examination of cases presenting in the six month period prior to the beginning of this audit process showed that a confirmed diagnosis was reached in 56% (24) of newly presented cases (n=54). A specific diagnosis was not reached in the remaining cases. Examination of the case histories showed that cases were worked up according to the preferences of the individual clinician and a standard approach was not applied. The introduction of a standardised approach allowed any clinician who had not initially been presented with the case to continue to provide continuity when seeing a case that he/she had not seen previously. No system for grading the degree of clinical pruritus had been used, and so only subjective assessments were occasionally recorded.

After the audit was instigated, an analysis of cases was examined at three monthly intervals to determine:

- the number of new cases of pruritus seen,*
- the number of cases in which a specific diagnosis was obtained*

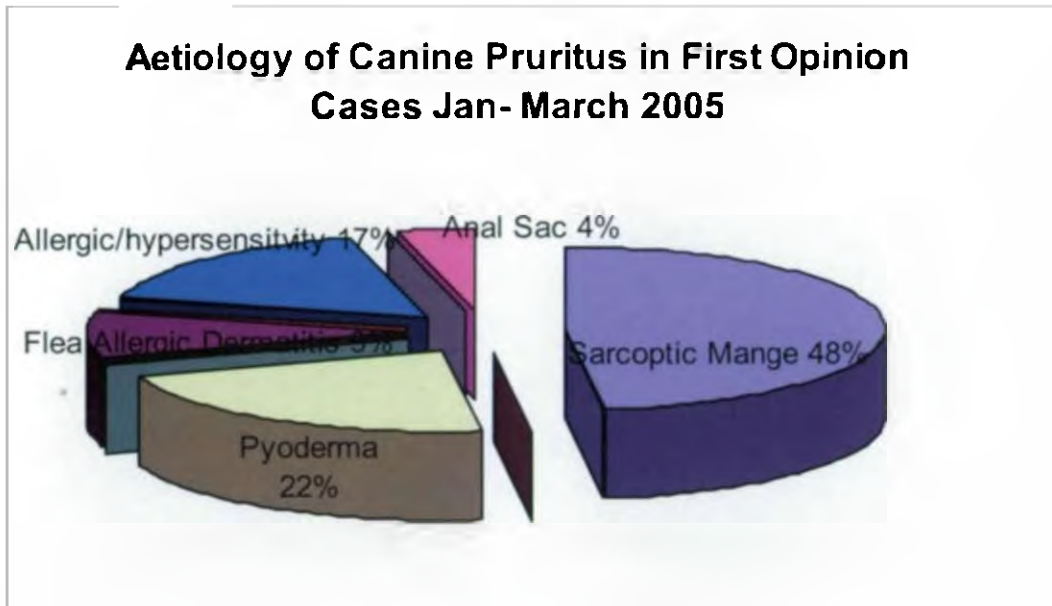
- the number of cases in a pruritus grade was consistently recorded and where this was the case the change in grade following treatment or management.

The findings are presented below:

Number of cases and findings for the period January to December 2005 following presentation with a history of pruritus:

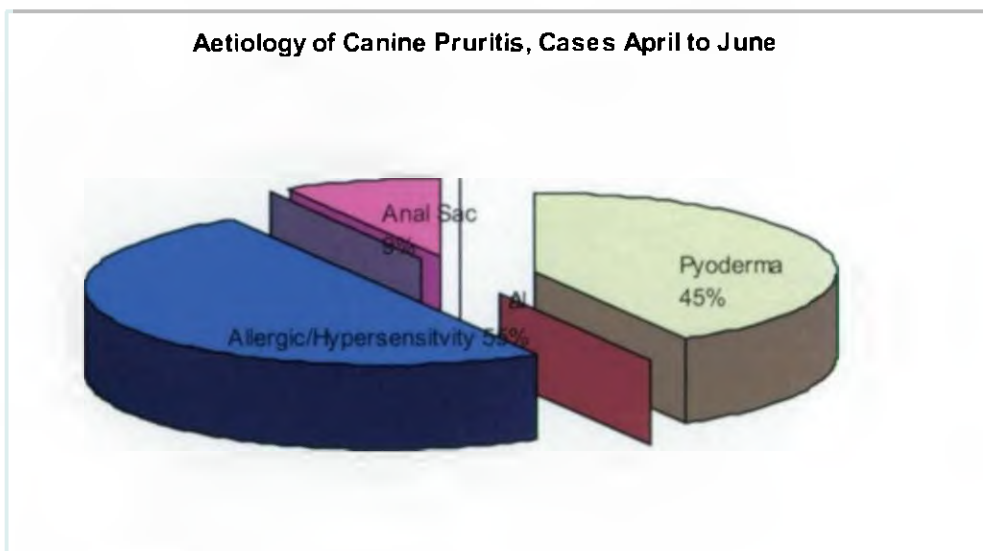
	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Totals	Av initial PG	Av Final PG	Change
Number of new cases	26	14	29	23	92			
Diagnosis reached	23	12	21	19	75			
Sarcoptes	11	0	8	10	29	3.75	0.75	-3
Pyoderma	5	5	2	3	15	3	0	-3
FAD	2	0	2	0	4	3.5	0.25	-3.25
Allergic	4	6	7	5	22	3.25	1.6	-1.6
Anal Sac	1	1	2	1	5	3	0	-3
No. Pruritus graded	21	7	17	6	51			
%	81	50	59	26	55			
Undiagnosed					17	2.75	1.25	-1.5
No Graded					9	53%		
Still undiagnosed- prob allergic					5	2.5	1.25	-1.25
resolved/lost to follow up etc					3	2.0?		-2

Analysis of data from the practice software programme was carried out at three monthly intervals considering cases presented during periods from January to March and April to June inclusive.



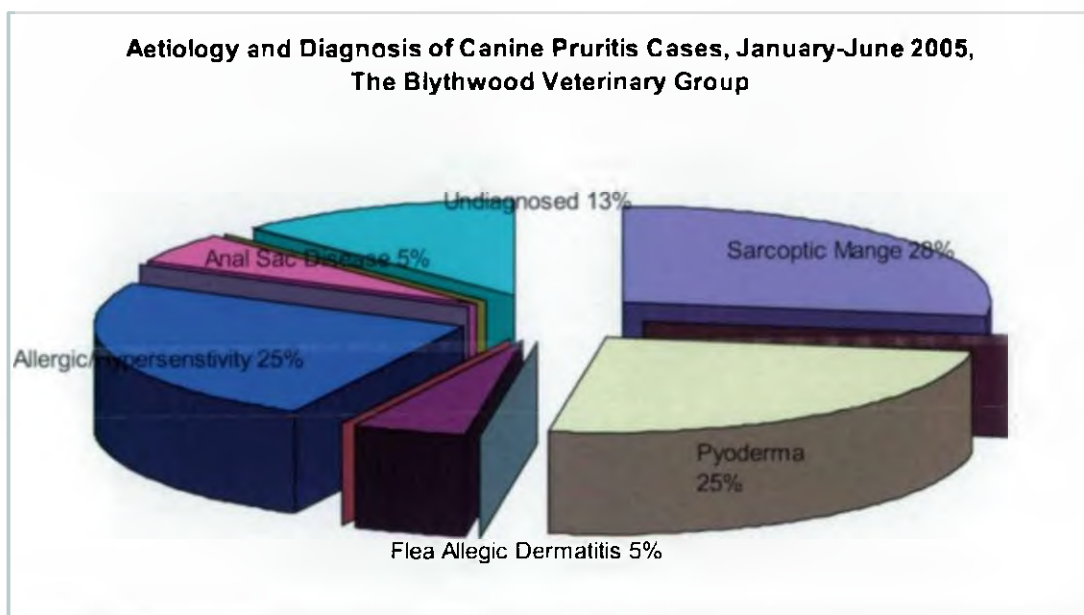
The most common diagnosis was Sarcoptic mange based on clinical findings, response to treatment (i.e. a return to a normal pruritus score following two applications of Selamectin). 45% of these cases were confirmed by sarcoptes ELISA.

ii.)



The analysis of the next three months is shown above. It is interesting to note that no cases of Sarcoptic mange were detected during this period. There is also a noticeable and probably significant increase in the incidence of allergic disease. Where the pruritus score was determined a 38% average reduction in pruritus score was noted. Evidence based data suggests a target of 50%. A search for Sarcoptic mange summary word also produced no cases.

iii.)



ANALYSIS OF AUDIT TWO

Step 1: Prepare for the audit process

The important part of the preparatory process for this audit was to generate evidence-based guidelines for the approach to cases of canine pruritus that had the backing of all the clinical team. Since the condition is common and each clinician would have tended to develop their own particular approach over time, guidelines that were not generally accepted as a constructive improvement on what was previously being carried out would either be ignored, or if rigorously enforced, engender significant resentment at the loss of clinical freedom that had been caused.

A significant amount of preparatory work went into producing information both in written format and integrated into our PMS to assist the clinician in following the guidelines.

Step 2: Establish guidelines

The guidelines were quite complex, involving a detailed outline for the first diagnostic and therapeutic approach for the first three consultations for dogs presented with signs of pruritus. Clinicians were also required to score the degree of pruritus at each consultation using a score sheet, and record the reason for the consult as "pruritus". Clinicians in the practice are trained to record a reason for every visit, using the facility automatically prompted by the PMS, but pruritic dogs could easily be recorded with other reasons that related to the aetiology of the condition, such as "allergic skin disease" or "sarcoptic mange" – it was fine for clinicians to use these in addition to "pruritus", but if the latter was left off entirely, the case would be missed from the audit analysis. It should be noted that compliance with the requirement to record the pruritus grade fell sharply and continually throughout the course of the audit, starting at 81% and falling to 26% by the end of the 12 month period. It is important to recognise that there is a tendency for a "fall off" effect with the audit process with time, as initial enthusiasm wanes.

Step 3: Select criteria and measure performance

This audit started out as a process audit, supposedly measuring how well clinicians adhered to the guidelines established for the treatment of dogs with pruritic skins. It became sidetracked into a piece of practice-based research looking at the incidence of various skin problems in our practice. This is interesting information, but in

retrospect it would have been better to have simply run an outcome audit that measured how good we were at reducing pruritis levels in dogs before and after the treatment guidelines were instigated. This would of necessity have had to include a process audit on compliance with recording pruritus scores, and perhaps by being more simple, would have made it easier to encourage ongoing compliance and avoid the fall-off that occurred. Depending on those results, it would then be possible to audit composite parts of the treatment guidelines to see how well they were being followed.

Step 4: Assess outcome and maintain improvement

This audit used data mining of key words to perform a retrospective analysis of the outcomes of treatment for cases of pruritus in dogs, in order to establish some sort of benchmark for comparison of the data generated once the audit was running. This suggested that whereas previously we had reached a diagnosis in about 56% of cases, once the audit was instituted, a diagnosis was reached in 75 out of 92 (82%) of cases seen over the year.

The results were monitored on a quarterly basis, and reported back to the audit team meetings, which were also used as an opportunity to remind clinicians to try and adhere to the guidelines and record the correct information appropriately. In order to bring about a long term change in behaviour, this audit will need to be run continually, and the clinical team continually encouraged to adhere to the guidelines.

Summary

Carrying out outcome audits can be difficult, but they are the ultimate arbiter of clinical performance, as process audits can only be significant if it can be clearly shown that following a certain process will invariably lead to an improvement in clinical performance.

In fact, the title of this audit suggests that it is a process audit of the way in which cases of pruritus in dogs are managed, but the results obtained are primarily an audit of outcomes, measuring the effectiveness of the guidelines in producing a definitive diagnosis and a resolution of clinical signs. The latter was effectively measured at the start of the audit by use of the client questionnaire to ascertain a pruritus score, but compliance with this dropped dramatically during the course of

the audit, and needed to be monitored and reinforced more regularly. A specialist might question just how definitive the diagnoses actually are, but I think they can be defended as fundamentally sound in practice (the clinician who ran this audit has an RCVS Certificate in Veterinary Dermatology).

As an incidental finding to the main purpose of the audit, this study also generated some interesting figures about the incidence and seasonality of dermatological disease in first opinion veterinary practice – data that is sorely lacking. The statistical significance of the data that has been collected so far is unsound, and the comments from the author regarding the “significance” of the data should be ignored. But with time, and perhaps even with the sharing of data from other similar practices, some very useful and significant research information could be gleaned.

TABULAR SUMMARY

	Comments
Choice of topic	The area for audit was common, and one which classically challenges many clinicians – many cases respond quickly to treatment but a “hard core” keep coming back and back.
Choice of criteria	Complex, and potentially confusing. The audit initially started out as a process audit, but ended up primarily measuring outcomes.
Evidence base	It was essential for the lead clinician to present sound evidence to the clinical team in order to gain their co-operation with the proposed guidelines.
Standards used	Performance was compared to a baseline measured retrospectively, and then monitored on a quarterly basis.
Use of IT	Coding simple and effective but depended upon compliance by the clinician. The use of macros on the PMS to provide the clinician with details of the guidelines for each of the three consultations was very effective.
Data validity	No data mining was used to check on cases that had not been coded properly.
Teamwork	The audit required quite a high degree of co-operation from the other clinicians. All clinicians accepted the guidelines with enthusiasm, and seemed to appreciate the benefits that following them would bring, but the initial high level of compliance waned significantly through the course of the audit.
Resources	Required a significant amount of time to set up the guidelines and supporting documentation, and for data analysis
Communications	Effective literature produced for clients. Guidelines communicated well to clinical team
Cost benefit	Treating pruritic skins more effectively has to be good for client retention, and having clear guidelines to deal with such cases reduces mixed messages in a multi-vet practice.
Key points	<p>Clinical freedom could be threatened by detailed clinical guidelines – need for team agreement and room for clinical discretion to suit individual cases.</p> <p>Criteria need to be very clearly spelled out from the outset.</p> <p>Excellent use of IT including guidelines displayed on the PMS</p> <p>An example of an outcome audit that could in the long term generate useful research data.</p> <p>The tendency for a fall-off in enthusiasm and thus compliance over the course of an audit needs to be recognised and dealt with</p>

4.5 Audit 3: Screening for feline hypertension

This audit was thought desirable because blood pressure monitoring equipment suitable for use in cats has only become widely available relatively recently, yet it had found to be a very useful screening tool in elderly cats, where conditions that cause high blood pressure, such as kidney disease and an overproduction of thyroid hormone, are relatively common. The effects of uncontrolled high blood pressure can be disastrous, such as sudden onset blindness due to detachment of the retina, or even death due to cardiovascular failure.

The lead clinician described the aims of this audit as:

Assessing the frequency with which blood pressure was measured in certain feline patients improving the number of patients being screened. Using the audit process it was assessed whether protocols to select certain 'at risk' patient categories would increase the detection rate of hypertensive patients.

The aims of this study were three fold –

- To assess the number of cases considered at a 'high risk' of developing hypertension cases that had their blood pressure measured - before and during the study.*
- To record any change in the number of cases of hypertension detected.*
- To assess if specific targeting of blood pressure measurement (BPM) to certain conditions improved the detection rate of hypertensive cases.*

For the purposes of the study hypertension was defined as a mean blood pressure of greater than 220mmHg with no concomitant clinical signs or a mean blood pressure of greater than 180 mm Hg associated with clinical signs (blindness, retinal haemorrhages, seizures, tachycardia).

METHODOLOGY

The study was divided into three periods of six months duration:

-Period I (July – December 2004 inclusive.)

– A retrospective review of computerised clinical records, searching for relevant cases [see 'Inclusion Criteria'] and blood pressure measurement.

-Period II (January – June 2005 inclusive)

– Clinicians were encouraged to target certain cases for blood pressure measurement [see 'Inclusion Criteria,'] At the end of Period II an analysis of computer records was performed and the statistics compared with those from Period I.

-Period III (July – December 2005 inclusive.)

– The final six-month period during which cats diagnosed as hyperthyroid had their blood pressure measured at each repeat T4 blood test, plus cases that presented with blindness or seizures

INCLUSION CRITERIA

During Period II, feline patients with certain signs were targeted for blood pressure measurement:

- Ataxia.
- Hyperthyroid – confirmed with total T4 or free T4 blood test
- < 8 years old, having pre- GA blood tests.
- Retinal abnormalities
- Seizures
- Senior Pet Profile.
- Sudden onset blindness.

Cats with nephritis were excluded to avoid data conflict with another audit project, otherwise nephritic cats would have been included.

USE OF IT

To enable identification of relevant clinical records clinicians were asked to use certain 'Key Words' when saving data during the audit periods. These key words were used for data retrieval at the end of each period.

SUMMARY OF RESULTS AT THE END OF PERIODS I AND II.

During Period II of the study the detection rate of patients with hypertension rose by 300% (from 2 to 6), whilst the number of cases having their BPM rose by 220% (from 5 to 11)

Of hyperthyroid cats only 14.3% [Period I] and 31.5% [period II] had any recorded attempt at blood pressure measurement. However these figures suggest that of compliant cats, 75% were shown to have hypertension. If this data is extrapolated, amongst hyperthyroid cats at this practise, potentially 12 cases of hypertension in a six-month period were going undetected.

It was noted that each cat with sudden onset blindness that had blood pressure measured were hypertensive. It was also noted that of those cats undergoing an investigation into the cause of seizures, each cat that had blood pressure measured was found to be hypertensive.

Conclusions at the end of Period II.

Three groups of cats were identified as most likely to be hypertensive. These were:

- *hyperthyroid*
- *history of seizures*
- *sudden onset blindness.*

It was proposed that for Period III of this audit cats with hyperthyroidism, seizures or sudden onset blindness would be specifically targeted for BPM.

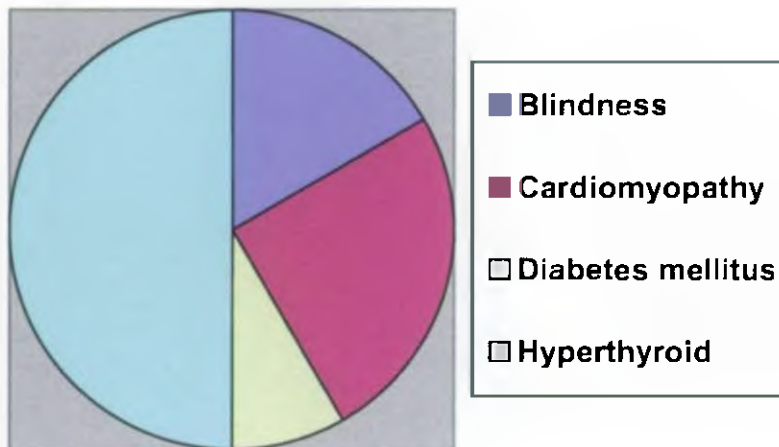
Each hyperthyroid case would have their BPM whenever routine free or total T4 samples were taken, as part of their stabilisation/ monitoring program. Clinicians were asked to record both those cases where measurements were successfully made and also those non-compliant cases where either client refused consent or the patient would not co-operate.

RESULTS FOR PERIOD III.

During the six months July – December 2005 feline patients diagnosed with hyperthyroidism had their blood pressure measured at each repeat T4 blood test.

Also cases of cats presenting with blindness or seizures also had blood pressure measured as part of the diagnostic work up.

Chart showing distribution of hypertensive cats at the end of Period III



SUMMARY OF RESULTS AT THE END OF PERIODS III.

The audit achieved its aim of increasing the number of feline patients that had their blood pressure measured by 1660%, and the number of cases with hypertension detected increased 650%. During the audit process the number of cats that had their blood pressure measured rose from five patients to eighty-three which represents a significant increase. Prior to the audit just two cats had been identified as hypertensive and this number rose to thirteen during the final six-month period. By the end of Period III 42.2% of cats diagnosed with hyperthyroidism were having their blood pressure monitored, a rise from 14.3% at the start of the audit process.

ANALYSIS OF AUDIT THREE

Step 1: Prepare for the audit process

It was not difficult to convince the clinical team that an increase in blood pressure measurements was likely to be beneficial to their patients. The main issue in terms of resources was to try and ensure that adequate nursing time was available to carry out the procedure, particularly since it needs to be carried out in an unrushed manner in order to obtain accurate readings. This involved wider issues, such as nurse staffing levels, and careful scheduling of the measurements.

Step 2: Establish guidelines

The guidelines were quite straightforward, but were modified as the audit progressed. After the first period of audit (as opposed to the retrospective analysis), it was realised that hypertension was particularly common in hyperthyroid cats, yet we were performing poorly in terms of monitoring blood pressure in those patients. It was decided to focus efforts more specifically on hyperthyroid cats when they were being screened and monitored for the condition, as well as continuing to encourage blood pressure measurement in other "at risk" categories. This strategy proved extremely successful.

Step 3: Select criteria and measure performance

The criterion used was very simple – either a cat in the relevant category had had its blood pressure measured, or it had not. This is a clear cut example of a process audit, where no attempt was made to quantify the results of treatment in those cats that were diagnosed as hypertensive.

Step 4: Assess outcome and maintain improvement

This audit clearly demonstrates a cycle that was carried out three times – once retrospectively to establish a baseline, and twice prospectively. The process of reviewing progress and modifying the guidelines was clear, and showed very specific benefits.

Summary

Analysis of this audit, particularly in its unedited version, demonstrates an audit leader who is desperate to carry out some practice-based research, attempting to measure the incidence of hypertension in a range of disease conditions. When one sees the outcome of this piece of work, it is understandable, because it throws up a great deal of interesting data about the population of feline first opinion cases that are hypertensive, and this type of first opinion data is very rarely published.

However, it has demonstrated how the audit process can throw up research questions that someone working in that field might be stimulated to answer. It might also be possible to carefully design an audit so that it could also produce data that would be of value to answer research questions, but the quantity of data required to

stand up to statistical analysis would either require a practice with a very high throughput of cases, or sharing of information. In future it might be possible for centres of academic research to collaborate with practices to collate and analyse this type of data.

It was fortunate that despite the danger of going off on a tangent, this project did meet the aims of the audit admirably, increasing the uptake of blood pressure measurement from 5 in the pre-audit retrospective six month period, to 11 in the first prospective six month period of audit, and to 83 in the third period – a highly significant increase. The impact of this figure is reduced by the fact that once cats have been identified as being hypertensive, they will have their blood pressure monitored on a regular basis, so these are not all new individuals.

We charge £8.19 plus VAT for each blood monitoring procedure. We already had the equipment required, and there were no significant disposable items used. The increase in numbers monitored rose from 5 in period one to 83 in period three – an extra 78 cats over the same length of time, and an extra practice income of approximately £648. There is an element of nursing time to counteract that extra income, but the measurements were generally booked at times when the nurse appointments were slack. If the nursing staff were fully employed, then the cost of taking on extra staff to cover this work would have to be factored into the overall cost.

<i>TABULAR SUMMARY</i>	<i>Comments</i>
<i>Choice of topic</i>	<i>The area for audit was important – an improvement in performance would result in a decrease in morbidity in the patients concerned.</i>
<i>Choice of criteria</i>	<i>A very clear and easy to measure process audit</i>
<i>Evidence base</i>	<i>Good base of evidence for process</i>
<i>Standards used</i>	<i>For the purpose of this audit, absolute numbers were used, looking for an increase from the baseline level measured retrospectively. Owner compliance was good but compliance from the patients was an issue, particularly since hyperthyroid cats are notoriously difficult to handle due to their condition, and BP can only be measured if the patient co-operates.</i>
<i>Use of IT</i>	<i>The audit leader carried out quite sophisticated data mining to extract retrospective data using key words, and to double-check the validity of the audit data</i>
<i>Data validity</i>	<i>As the blood pressure recording is a chargeable item, it was easy to recall data, although when patients were non-compliant, nurses needed to enter it as a zero charge</i>
<i>Teamwork</i>	<i>This project required excellent co-operation of both the veterinary and the nursing team, which was achieved admirably</i>
<i>Resources</i>	<i>Required a moderate amount of time for data retrieval and analysis. We already possessed the blood pressure monitoring equipment. Significant nursing time was required for the monitoring process, but there was no requirement to employ extra nursing as it could generally be scheduled during slack times of day.</i>
<i>Communications</i>	<i>Guidelines communicated well to the clinical team, including changes put into place after the second period was reviewed. Owner concordance was found to be straightforward once the recommendation was made by the clinician.</i>
<i>Cost benefit</i>	<i>A measurable benefit to owner and to practice by encouraging the routine use of this diagnostic procedure.</i>
<i>Key points</i>	<ul style="list-style-type: none"> • <i>Potential conflict between practice-based research and audit is well illustrated</i> • <i>Clinical audit can help to draw attention to important research questions, and could contribute valuable first opinion data to research projects</i> • <i>A very significant improvement in performance and a cost benefit was demonstrated, providing nursing staff are not already fully employed</i> • <i>Close co-operation between veterinarians and nurses can produce very significant benefits</i> • <i>Audit can be an effective means of promoting the effective uptake of new technology</i>

4.6 Audit 4: the management of feline chronic nephritis

This audit aimed to improve our care of elderly cats suffering from chronic kidney disease as concordance with the treatment protocols advised by the clinician is often poor. It attempted to cover three areas:

- Dietary compliance
- Drug protocols
- Disease monitoring

METHODOLOGY

For inclusion in this audit, cats with chronic nephritis were defined as:

- *Being over eight years of age*
- *At the outset, having a blood creatinine of over 220 $\mu\text{mol/L}$*
- *Not having a clinical course that leads the clinician to believe that it was suffering from acute, reversible renal failure*
- *Having owners that are, in principle, prepared to co-operate with the proposed treatment protocol*

All such cats are marked on their record cards as "nephritis 1703"

The owners were given a handout explaining the rationale for treatment, and patients should receive the following treatment:

- *Feeding with a restricted protein, low phosphorus prescription diet (target 100%)*
- *Fortekor 2.5 mg sid (target once every day), unless the blood creatinine rises by more than 50% from the initial value once treatment has commenced (Chandler et al., 2004)*
- *Blood testing for BUN; Creatinine; PO_4 ; UPC ratio; blood pressure and weight at the following minimum intervals:*

Day 1

Day 7

1 month

3 months

6 months

An appointment with a veterinarian once these results have been obtained, to review progress.

Additional diagnostic tests and treatment may be given as needed, at the discretion of the clinician.

Compliance will be encouraged by monitoring these cases with regular call-backs from the veterinary and nursing staff

CRITERIA

The compliance will be reviewed by the clinician after 6 months.

RESULTS

An analysis was carried out of cats newly diagnosed with chronic nephritis since the start of the audit ten months previously. Over this period there were just four potential candidates suitable to be entered into the audit. Two patients have followed the guidelines diligently and two have lapsed. There were not enough cases to draw any conclusions from this.

ANALYSIS OF AUDIT FOUR

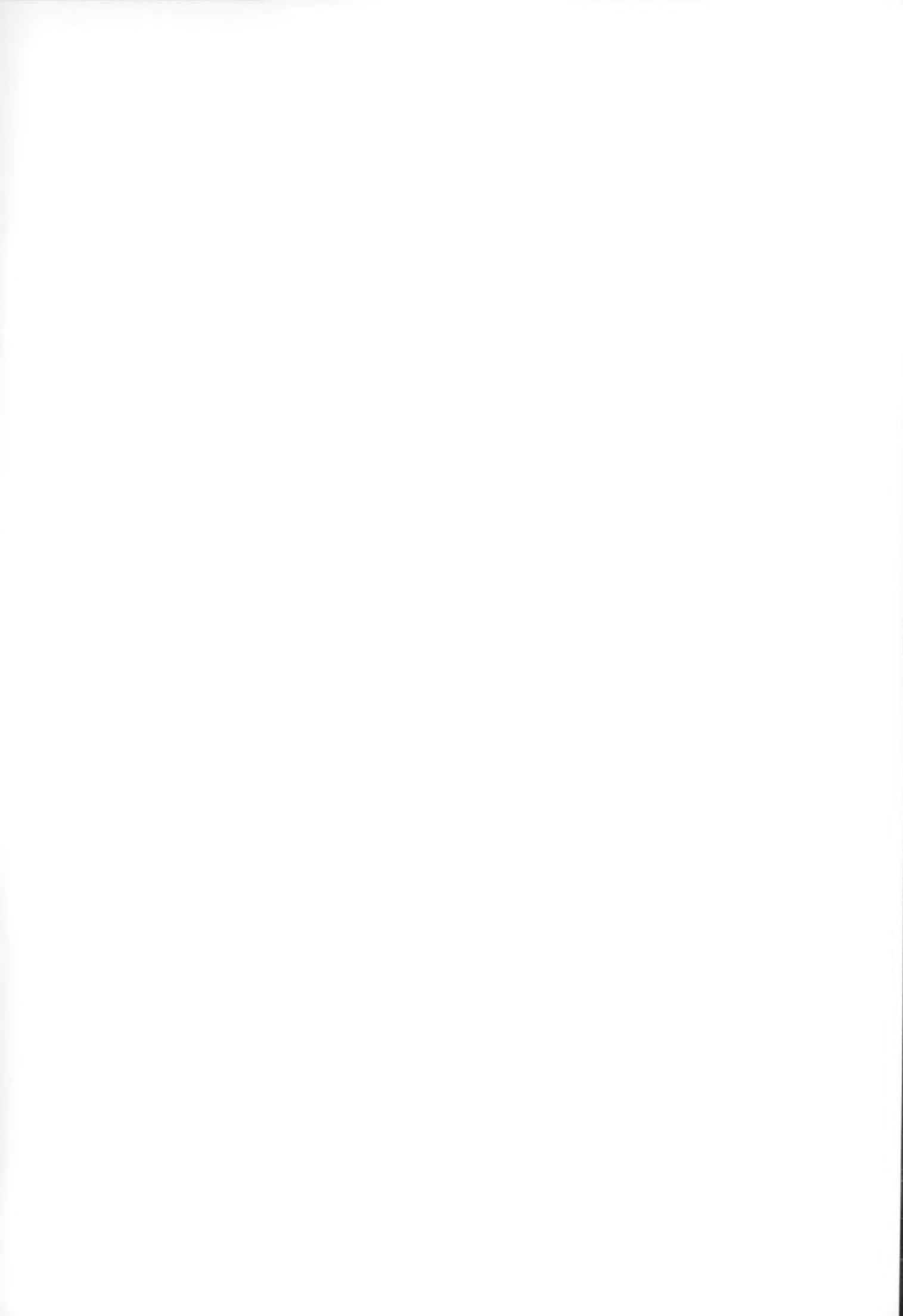
Step 1: Prepare for the audit process

A lot of effort went into preparing this audit, but perhaps what could have been usefully carried out was to have retrospectively analysed the incidence of new cases of chronic nephritis in cats before the topic was chosen and the audit designed.

Step 2: Establish guidelines

The guidelines were based upon the best available evidence, that was carefully and critically reviewed. As a result, they reflected "best practice", that may have been over-ambitious in a real first opinion environment.

Step 3: Select criteria and measure performance



The criteria measured were far too complex for this audit, attempting to cover a whole range of compliance issues. Recalling the data was simple, but there simply was not enough data to analyse usefully.

Step 4: Assess outcome and maintain improvement

Steps were taken to search the database and to lobby clinicians to try and increase the number of cats entering onto the audit, but with almost no success. It was eventually decided to modify the audit design to a much less demanding guideline relating solely to blood parameter monitoring.

Summary

This audit was disappointing, but it nevertheless identified some very important points about the process. The fundamental problem was that the numbers of patients entering on to the audit was far too small to be able to produce any useful figures. This was due to three factors:

- New cases of feline chronic nephritis were less common than originally thought
- The audit was limited to newly diagnosed cases, which ruled out many potential candidates
- The audit was designed to monitor concordance in clients that had initially taken the step of agreeing in principle to follow the guidelines. The alternative would have been to include all cats with the diagnosis automatically, but then the concordance would have been a lot lower. Both approaches would have been valid but neither would have generated sufficient data in over this particular audit period

The guidelines were also complex, and had sufficient cases been identified, compliance from the clinicians in charge of the cases may well have become an issue.

A decision was taken to revise the audit fundamentally by changing the guidelines to recommend a minimum of three monthly blood testing for all cats with the diagnosis



of chronic renal failure (not just necessarily newly diagnosed patients) but the results of this new audit were not yet available at the time of writing.

TABULAR SUMMARY

	<i>Comments</i>
<i>Choice of topic</i>	<i>The area for audit was a valid one, but new cases of the condition do not occur commonly enough</i>
<i>Choice of criteria</i>	<i>Far too complex</i>
<i>Evidence base</i>	<i>Good base of evidence for the guidelines, although some debate about the proven value of ACE inhibitors</i>
<i>Standards used</i>	<i>100% compliance was aimed for once owners had agreed in principle to follow the guidelines. The standard would have had to be set much lower if all nephritic cats had been included automatically.</i>
<i>Use of IT</i>	<i>Coding simple and effective</i>
<i>Data validity</i>	<i>Errors on coding picked up with data search</i>
<i>Teamwork</i>	<i>There were not enough cases to really test how the team functioned</i>
<i>Resources</i>	<i>Required a moderate amount of time for data retrieval and analysis. The cost of the tests was covered within the charge to the client</i>
<i>Communications</i>	<i>Effective literature produced for clients. Guidelines were too complex to be easily understood and followed by the clinical team</i>
<i>Cost benefit</i>	<i>In the small number of cases that did comply with the guidelines, there was a clear cost benefit to the practice in terms of extra revenue generated from the laboratory tests, and drug and diet sales.</i>
<i>Key points</i>	<ul style="list-style-type: none"> • <i>Need to audit conditions that occur commonly. A retrospective audit of the data may help to clarify this</i> • <i>It is vital to keep the audit design, and specifically the criteria, simple</i> • <i>The evidence base for treatments whose benefits are taken for granted sometimes do not stand up to close scrutiny</i>

4.7 Audit 5: improving concordance with nurse weight loss clinics

This audit was run by the nursing staff across all of our sites. They worked as a team, but one took the lead in organising the audit and saw the majority of the patients. It was perceived that although a weight clinic was available, it was being under-utilised. It was thought that this was partly due to clinicians and receptionists failing to refer some suitable cases to the nurses running the clinics, but primarily because once attendance at a weight clinic was recommended, it was not followed through, and many owners failed to attend, even though they may have shown willingness in principle.

METHODOLOGY

We decided to measure:

- Client compliance to the weight clinic
- Success rate of weight loss in the animals attending the clinics.

Patients to be included are those that have been:

- Diagnosed by a vet as overweight and referred to the nurse for the weight clinic
- For those who attended the clinic, patients that are eating the R/D diet food.

Targets:

- We hoped to achieve compliance of at least 75% of clients attending the clinic after referral
- We would like 90% of animals to achieve their target weight.

Guidelines

- Vet refers patient to nurse after health check carried out.
- If nurse free, consultation carried out straight away.
- If unavailable, an appointment made or email sent to nurse.
- Nurse follows up case by ringing owner to arrange visit.
- Nurse makes an appointment on the computer.



- Nurse adds the client to her paper diary to add client to the audit and avoid overlooking if client does not keep appointment.

Once client in the clinic nurse will:

- Weigh animal, record chest and abdomen measurements, check body condition score.
- Record on computer and in client's own handbook so that they can monitor their pet's success and to help remind them of what they should be doing.
- Decide on the amount and type of food and exercise per day.
- Discuss any problems and reiterate the importance of sticking to the diet.
- Sell recommended food with vouchers for money off (to help compliance)
- Give out free weight watcher pack
- Arrange re-examination for 1 months time (or earlier if problems or complications indicated)

Measurement

We compared the number of clients referred to the weight watcher clinic with the number of clients who attended over a 3 and 6 month period.

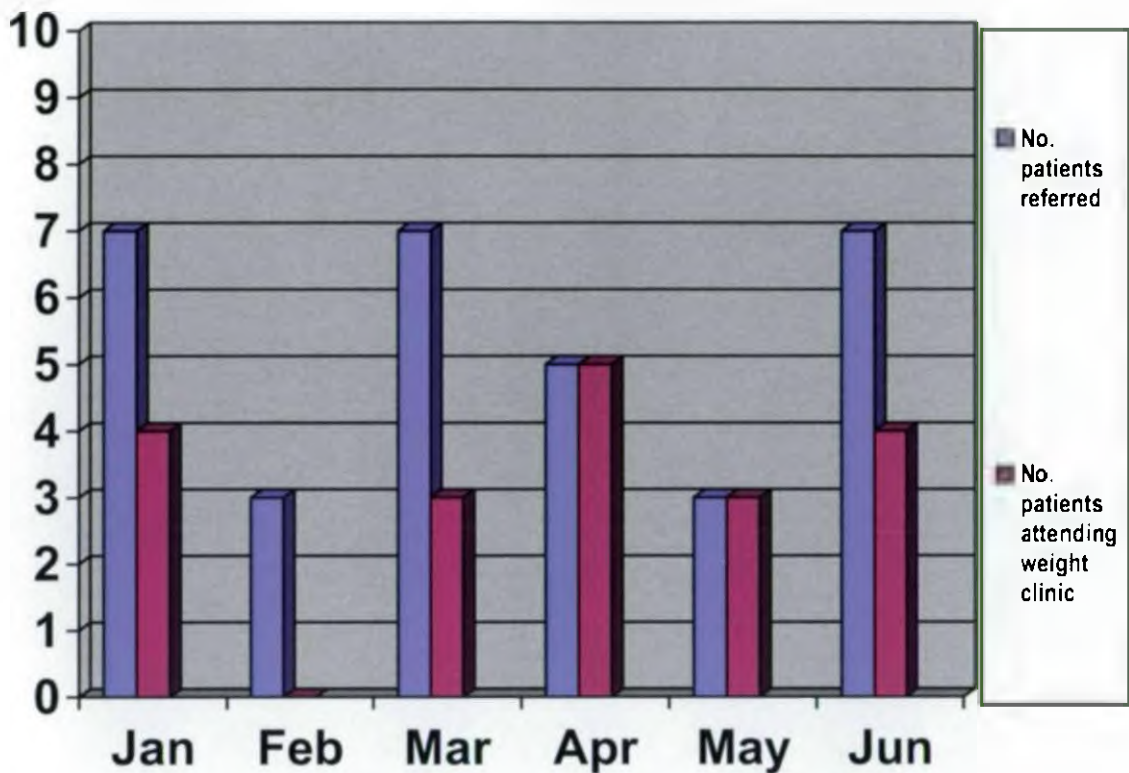
For each case of non-compliance we noted the reasons

We measured the success rate of weight loss in patients who attended the clinic for a 3 and 6 month period

Audit

findings:





This graph shows that after the 3 month review in April, we achieved 100% compliance with the recommendation of the vet to commence attending the weight clinic for April and May.

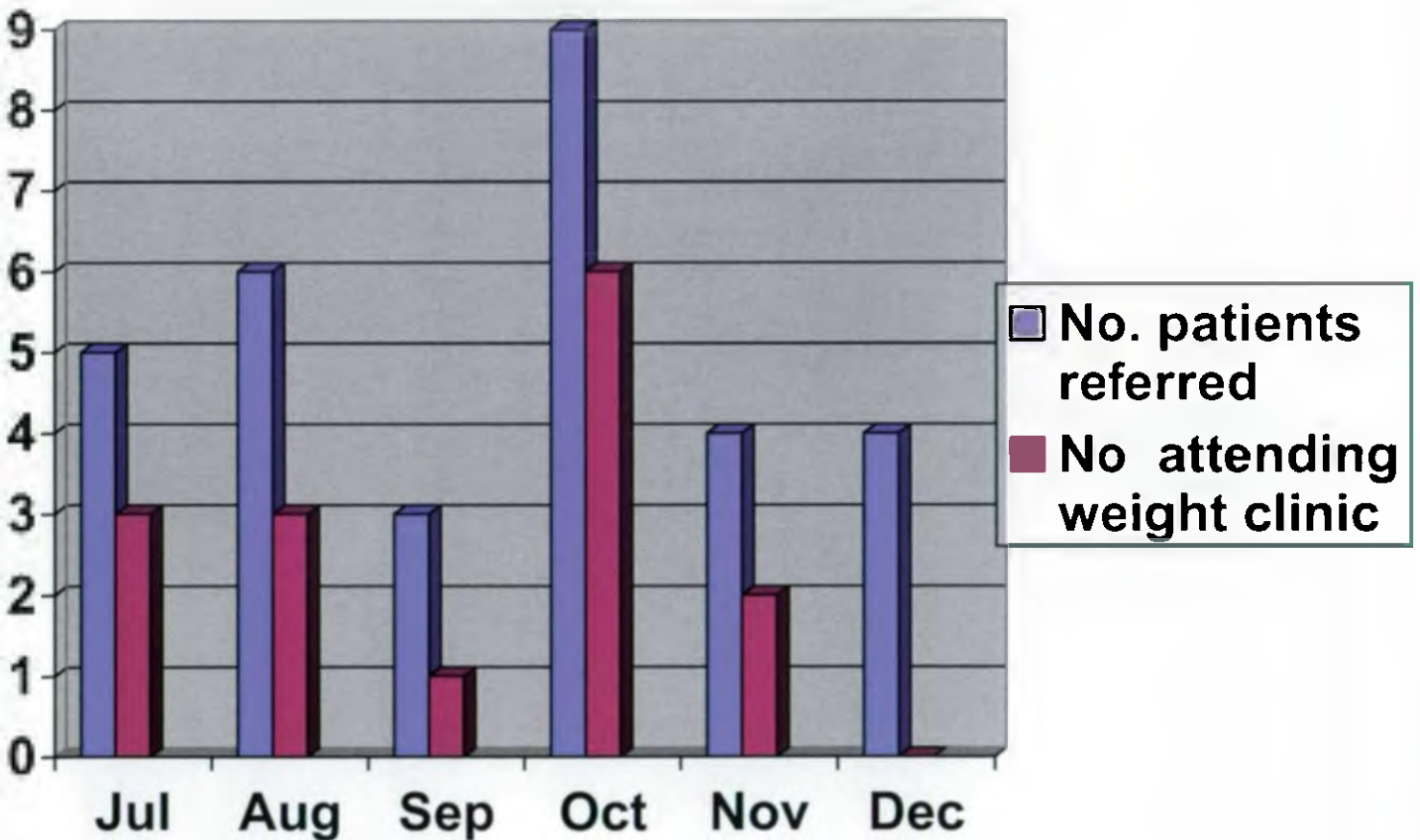
At the review in April, we discussed problems with compliance and found several areas that needed improving.

- Client telephone numbers were incorrect. (2)
- Some clients believed weight reduction was not a priority. (2)
- Clinic was at inconvenient times (3)
- Clients unwilling to change the diet (2)
- Clients were unwilling to attend regularly (3)
- Client concerned with her other ill cat (1)

Changes made to guidelines at review:

- Vets/nurses took stronger line on obesity. Examples shown of the difference between the calories in human food when compared to feeding it to a dog or cat.
- Reviewed times of the clinics
- Emphasised benefits of specialised food – better faster results
- Re examinations booked at time of appointment, to avoid owner going home and forgetting to ring to make a follow up appointment
- All telephone numbers confirmed at client's contact with surgery

Audit findings



This graph shows more non-compliant clients, despite the greater number of referred patients

Second review:

At the end of October, we carried out a survey to find out why clients From January to June were not attending the weight clinics.

- Owners did not want to change the animal's current diet (1)
- Owner did not communicate with spouse that animal needed to go on a diet (1)

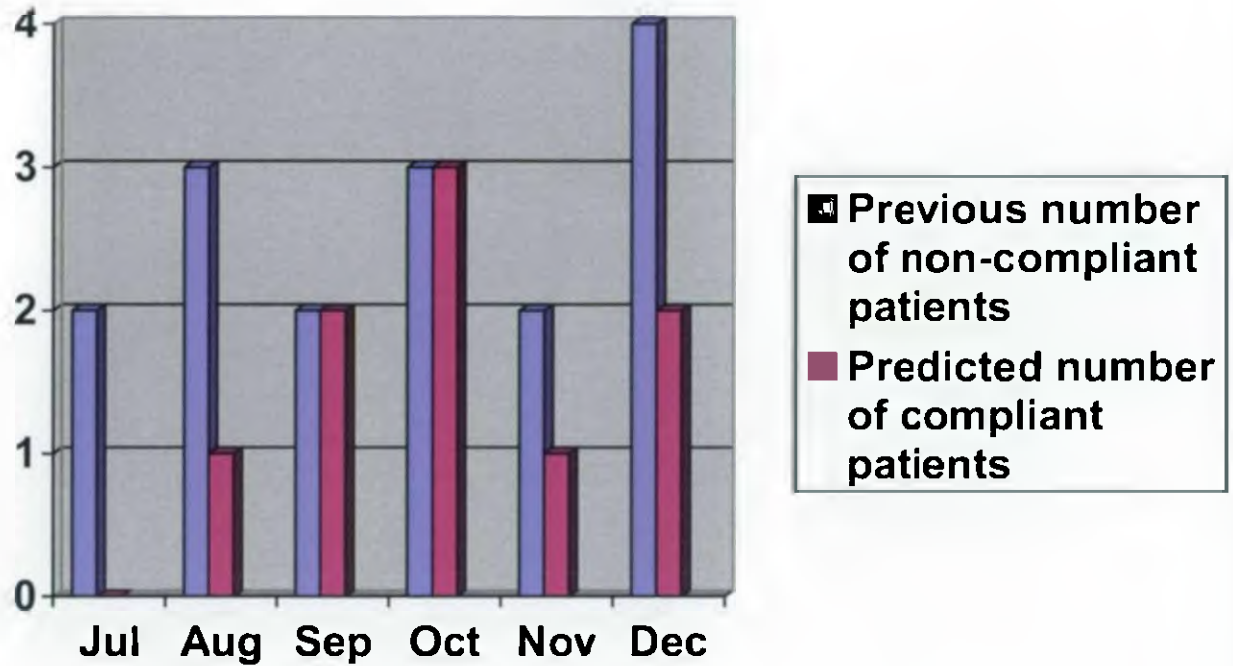
We found that a large number of clients were "slipping through the net" and when we put in a computer search, we found that a very significant number of clients names had never reached the list of clients waiting to attend the weight clinic.

We were unable to contact the other non-compliant clients so in January and February 2006, we reviewed our protocols again. This time we gave several members of staff working different shifts, a list of the names of non-compliant clients.

From period Jul to Dec 2005 there were a total of 16 non-compliant clients. These clients have now been contacted.

The graph below shows the number of clients that are now predicted to become compliant (i.e they have now made an appointment to attend the weight clinic) The key refers to the month they were 1st referred to the weight clinic. They are expected to become compliant in February or March 2006





This graph shows that a further 9 patients are expected to become compliant

A) Client compliance to the weight clinic

A total number of 61 clients were advised to attend the weight clinic from 2 surgeries.

Bushey surgery

19 clients attended

15 were non-compliant

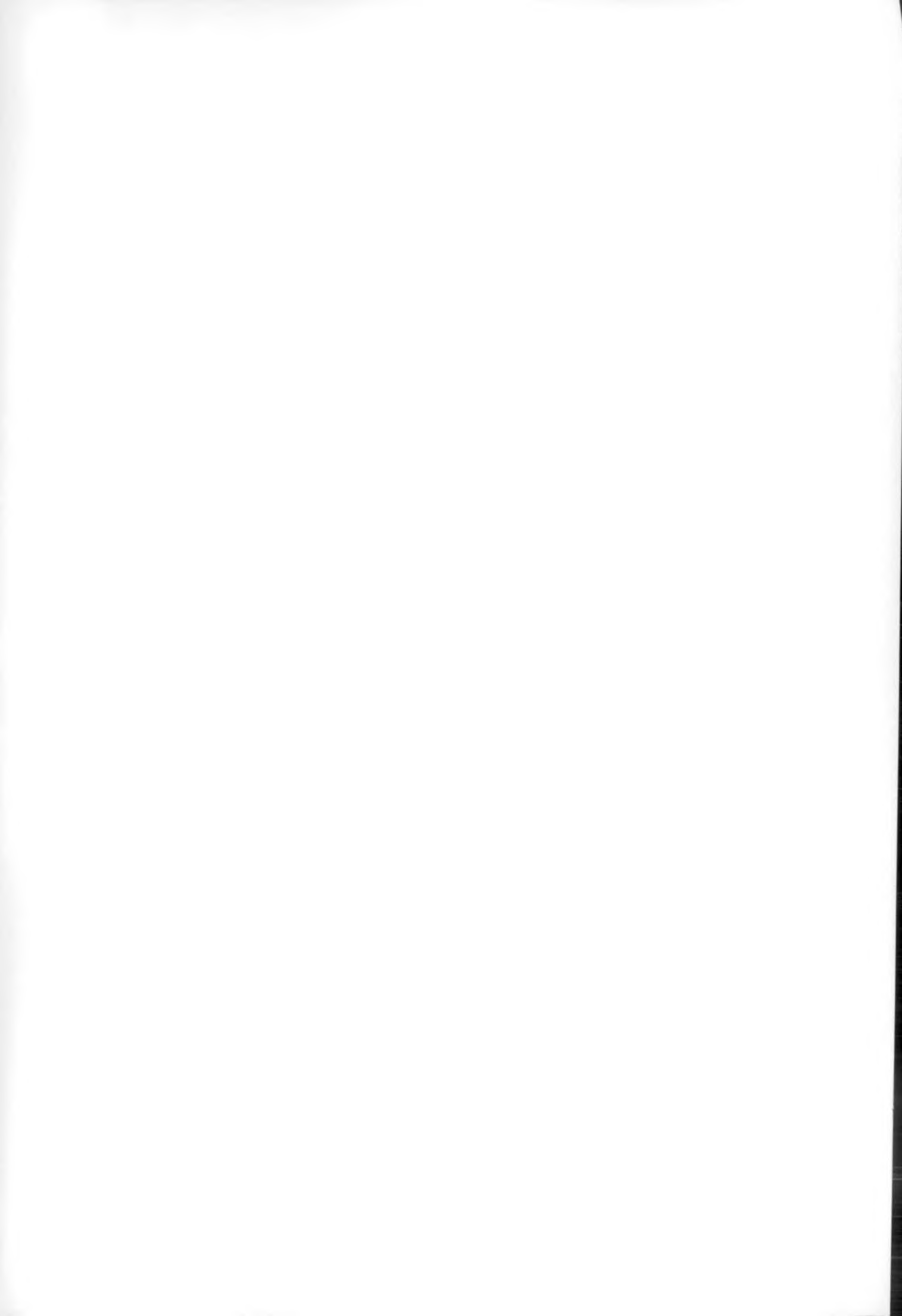
$$19/34 = 56\% \text{ compliance}$$

Hatch End surgery

13 clients attended

14 were non compliant

$$13/27 = 48\% \text{ compliance}$$



Overall compliance to the weight clinic from January to December 2005 = 52%

Expected overall compliance now clients missed from list have been contacted = 67%

B) Success rate of weight loss in the animals attending the clinics.

All the animals attending the weight clinic had lost weight by the 3 month review, except one animal. (This animal lost weight and then regained some!)

3 animals reached their target weight loss within the specified amount of time

None of the remaining animals have, as yet, exceeded the maximum time to weight loss. We are still waiting for them to reach their targets.

CONCLUSIONS

We aimed to achieve compliance in 75% of clients. Our actual level of compliance was 52%. We had originally thought that we were at 67% until we found a loophole in our protocol! This was only found near the end of our research when we put in place a method into the computer for searching for clients that had been referred. We expect the actual compliance to be at 67% once these clients attend their arranged appointments.

At each review, we found ways of helping to keep our clients compliant, for example by making follow up appointments at the time of their weight clinic and checking client's telephone numbers. By regularly reviewing our protocols we were able to improve our client compliance. Although we did not reach our aim of 75%, we are improving our methods all the time, and I think it has been good for us to aim high.

Our second aim was to have 90-95% of animals achieving their target weight (preferably in their estimated time to weight loss). This was more difficult to

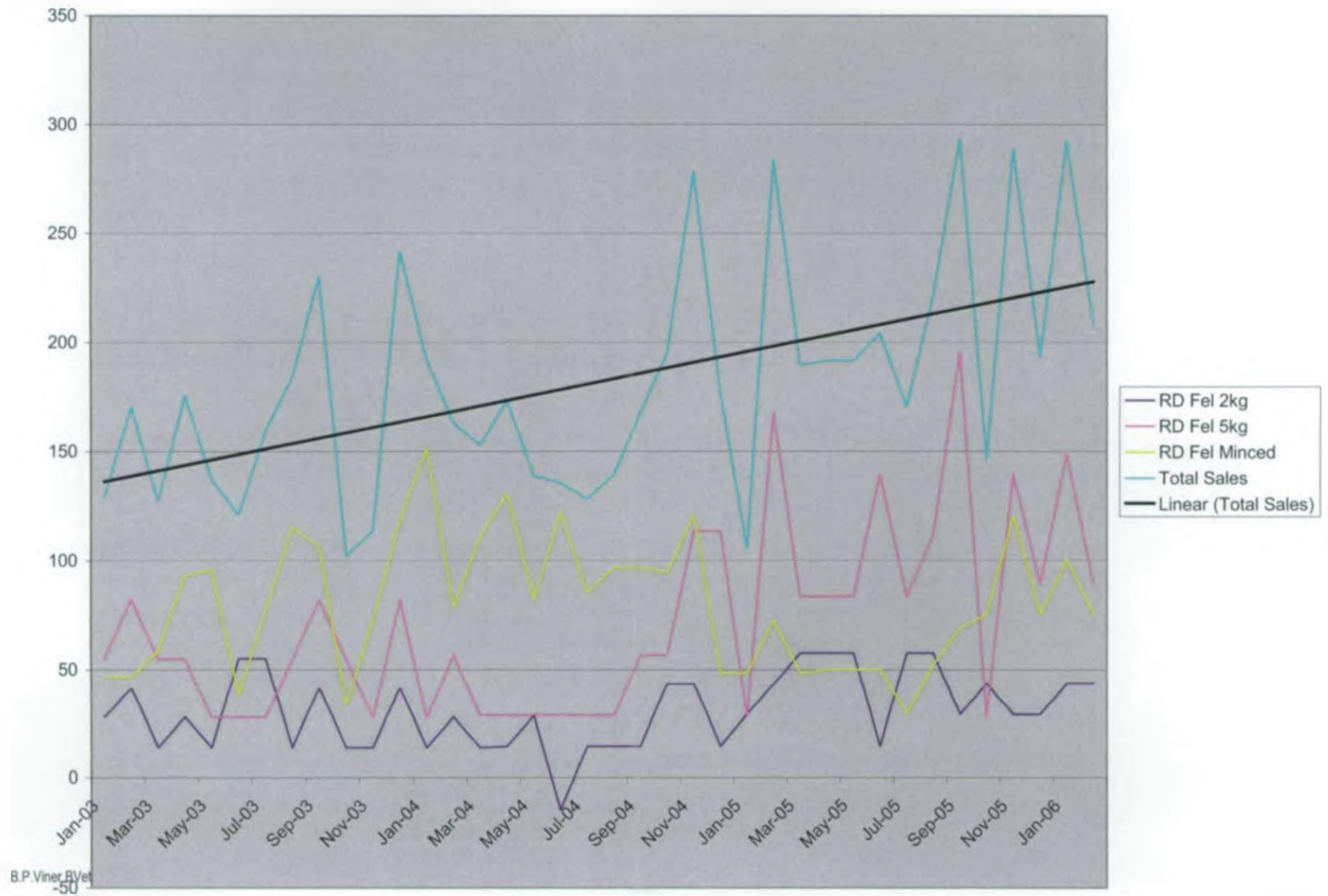


record as weight loss time varies so much from animal to animal. We are still waiting for many animals to reach their target weight within the estimated time.

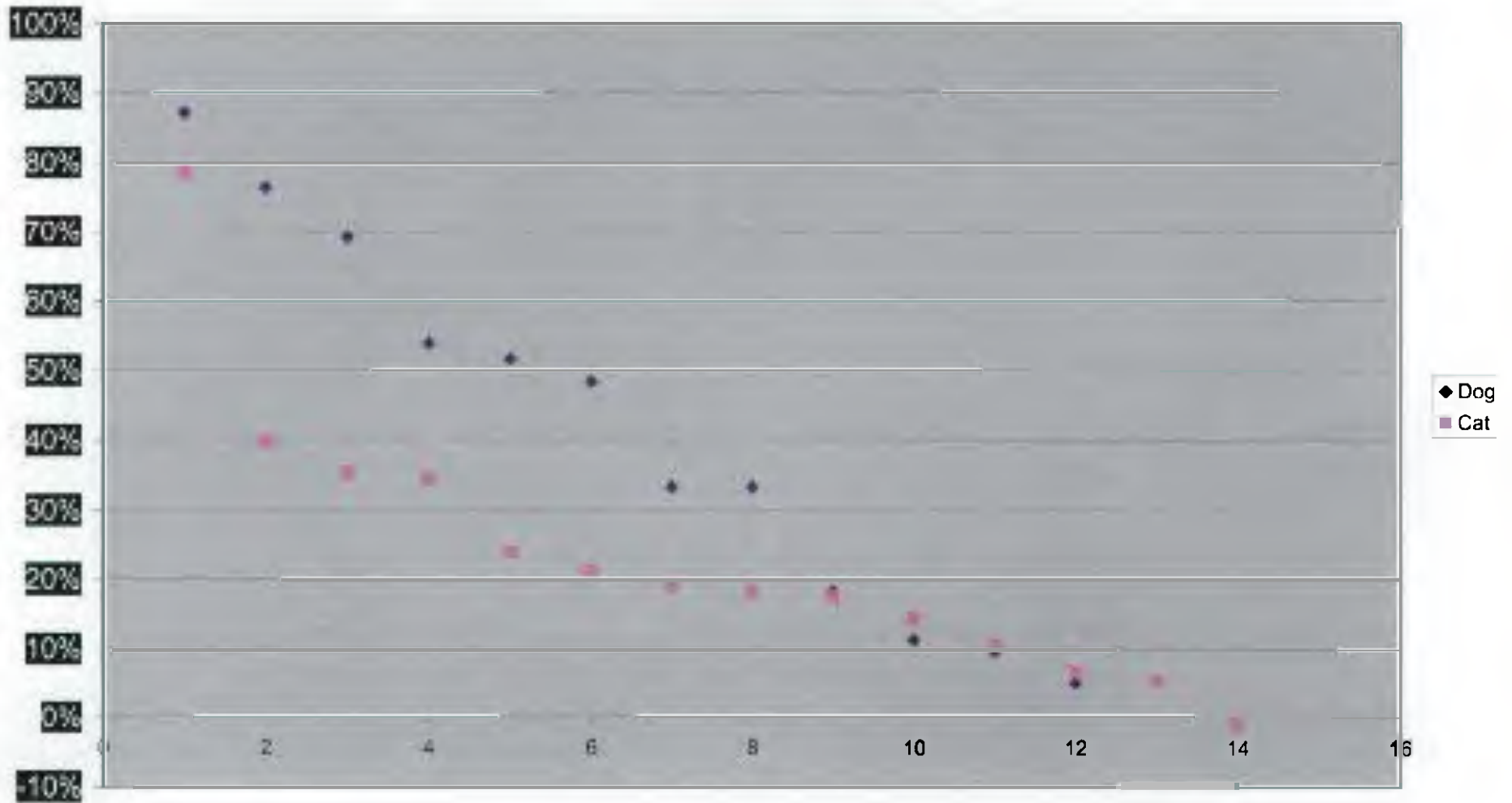
The final two graphs show the increased sales of feline diet food over the period of the audit, which increased by about £100 per month. We were not able to illustrate any change in sales of canine diet foods – this may be because issues of compliance are more critical with cat owners.

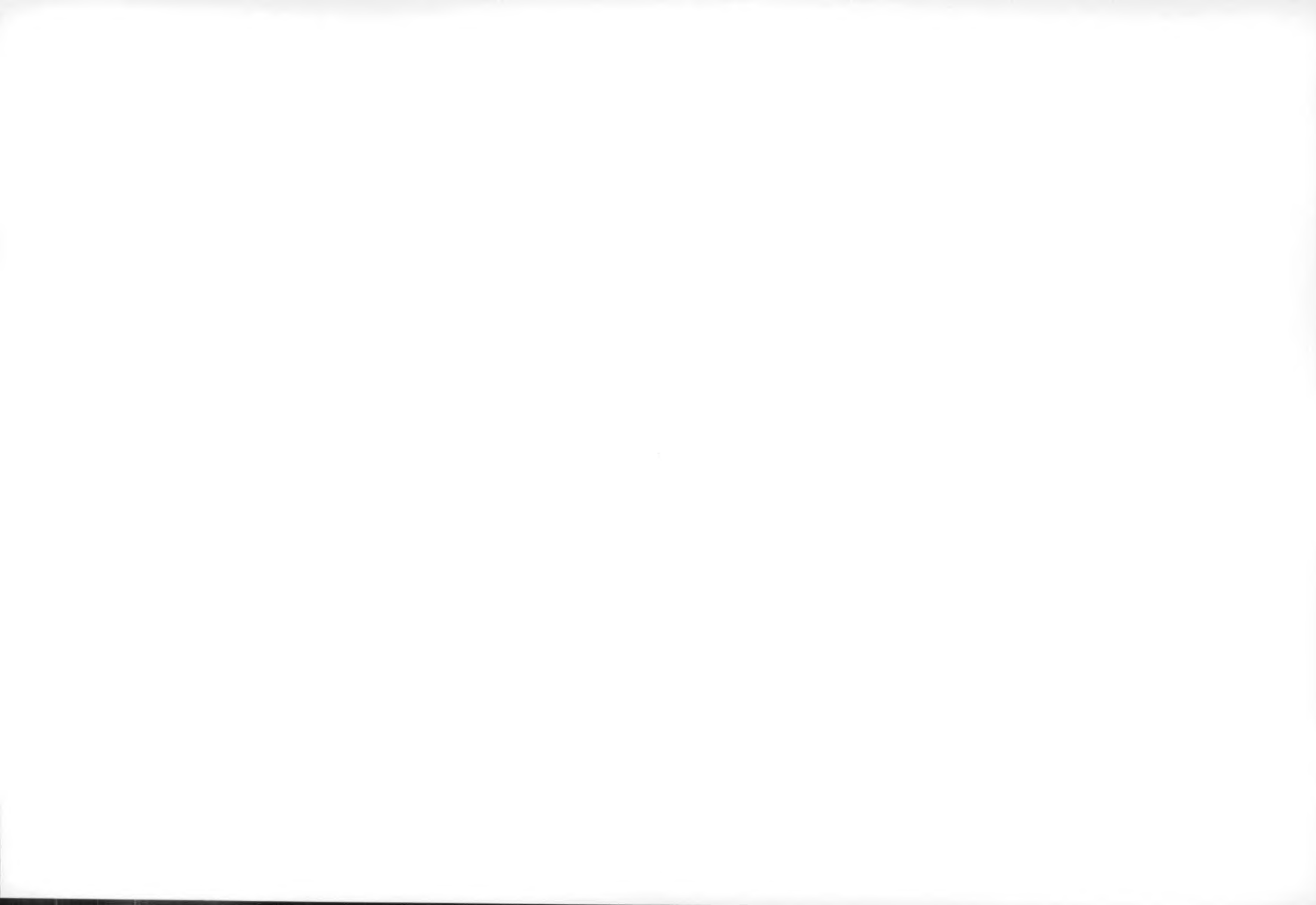
The second graph shows the weight loss achieved by animal – again, it can be seen that success is more straightforward with most dogs than with cats:







% of target wt loss at 3 months





This audit conformed as follows with the guidance for carrying out an audit:

Step 1: Prepare for the audit process

From the outset of the project, the veterinary nursing team played an active part in the audit meetings. This was important for many of the audits, for which they were often involved in many of the procedures and client interactions, but was particularly important for this nurse-led audit. Manpower resources were a potential issue, but we were fortunate in having newly recruited an experienced and enthusiastic VN, who was going to take particular responsibility for running our nurse clinics, and so led this audit. It was important for the veterinary surgeons and reception staff to ensure that suitable cases were referred to her, and this was reinforced at several of the audit meetings.

Step 2: Establish guidelines

The decision to refer a case was usually a veterinary one, but once a pet had had a health examination and was deemed suitable to start on the programme, a very detailed set of guidelines had been drawn up to encourage attendance and monitor compliance.

Step 3: Select criteria and measure performance

As this was primarily an audit into compliance, the primary indicator of success was the attendance of owners and their pets during the course of the clinics, and it was hoped that weight loss would follow on from this. In the past, we had found that many clients did not start to attend the clinics despite having been advised of the need to do so, so the number referred compared to the number that actually started attending was measured – a process audit. However, it was also felt relevant to measure the weight loss that the patients actually achieved, as an outcome audit, to gauge the overall success of the programme, and hopefully to provide encouragement for both staff and clients in the future. In their conclusions, the audit team have been tempted to anticipate the actual level of compliance once appointments that have already been arranged have been taken up, but it is important that only the actual measurable results are taken into account at this stage of the audit.



Step 4: Assess outcome and maintain improvement

The audit was commenced in January 2005, and progress reviewed at the meeting of the 20th of April, and several adjustments made to the guidelines. For the first three months of the audit, only 7 out of 17 (41%) clients that had been referred to the clinic actually took advantage of it, but after the review in April 2005, this figure rose to 12 of 15 (80%) for the following three months.

Compliance fell again to 8 out of 11 in July, August and September (73%), perhaps to some extent related to the summer holidays, When a further review of the audit cycle was carried out in October 2005, steps were again taken to improve compliance, but this was not reflected in an immediate increase in compliance. The reasons for this were again reviewed, and although the audit team were optimistic that this would be reflected in a marked increase in compliance in the following period, this was not confirmed during the audit period. This again illustrates the need to keep reviewing and refining the audit process to counteract the tendency for compliance to fall off with time.

Overall, concordance with owners taking up a veterinarian's recommendation to attend a weight clinic was 52% over the year. The figures for weight loss for those pets that attended the clinic that were produced by the audit team, will hopefully act as an added incentive to practice staff and their clients to promote and persevere with the weight clinics.

Summary

Setting up nurse clinics successfully is perceived by many as being a sound idea, and "wellness" management is seen as vitally important to the future growth of veterinary practice. However, many practices have in the past found it difficult to recruit clients and maintain momentum with such clinics, and this had been the case at the Blythwood Veterinary Group, where obesity, arthritis and senior pet clinics have been started up enthusiastically, but gradually petered out. There is a marked cost benefit by encouraging these clinics to prosper, because although they are offered to clients without charge, there are direct financial benefits in terms of increasing the sale of diet foods, and indirect, but arguably even more important benefits by encouraging regular



visits to the practice by pet owners that can be almost guaranteed to become strongly bonded to the practice.

This audit demonstrates that the process can play a role in managing such clinics, and helping to monitor and maintain the degree of compliance that is being achieved. It seems that although client-based factors are obviously important in achieving compliance with a particular course of action, the staff can also play a very significant role in motivating them (AAHA, 2002). Knowing that the process is being measured, seeing the measurable effect that their actions can have upon compliance, and also being able to quantify the successes that are being achieved, are all very significant motivators for the staff involved.

In human medicine, nurses play a crucial role in many audits. As part of their Quality Improvement programme, the Royal College of Nursing is committed to develop a portfolio of web-based audits to enable nurses and healthcare staff to improve practice, which in turn they propose will benefit patient care (see www.rcn.org.uk/resources/institute/qualityimprovement/clinicalaudit.php).

This audit highlights the fact that there is no reason why this should not be mirrored in veterinary practice. Nurses may often have both the time and the inclination to get involved, and gain professional satisfaction from being able to play a worthwhile and recognised role in the management of their patients health.

The benefits of encouraging a continual cycle of improvement by assessing progress and taking whatever steps are deemed necessary to maintain an improvement in performance, are clearly demonstrated by this audit, where a benefit is seen when progress is reviewed. It is likely that this audit will need to be maintained on an ongoing basis, or at least repeated regularly, in order to prevent the programme from faltering in the future.



TABULAR SUMMARY

	Comments
Choice of topic	A worthwhile area to audit, as obesity control is both a common and an important area of clinical practice, where owner concordance is a major obstacle to performance
Choice of criteria	Clear criteria for both the process (referred clients that attend) and outcome (weight loss achieved)
Evidence base	Good base of evidence for the benefits of obesity control
Standards used	75% concordance for attendance and 90% for weight loss are both very high targets, but failure to meet them does not mean that the practice is under-performing. They probably need to be modified in the light of experience.
Use of IT	PMS used to track clients, generate reminders, and monitor weight loss.
Data validity	Depended upon compliance by the clinician to enter "weight clinic" onto the record when making a referral
Teamwork	This audit involved the whole of the practice team, including veterinarians, nurses and front desk staff. The outcomes were excellent for practice morale.
Resources	Required a considerable amount of time for data retrieval and analysis, as well as nurse time for the clinics, which were not charged.
Communications	Effective literature produced for clients. Guidelines communicated well to all of the practice staff
Cost benefit	Some cost benefit from client sales and perhaps more significantly yet less quantifiably from improved client bonding.
Key points	<ul style="list-style-type: none"> • Veterinary nurses can play an active and highly constructive role in the audit process • The importance of reviewing progress and modifying guidelines accordingly was clearly demonstrated • This is an area where cost benefits in terms of diet sales and long term benefits from improved client bonding can be encouraged by the audit process

4.8 Audit 6 – postoperative complications of neutering

Initial audit design:

Objective:

To reduce the incidence of post operative complications (POC) following routine canine and feline surgery at Blythwood Veterinary Group.

Reason for choice of audit:

A reduction in POC is of benefit to animals, clients and the practice in terms of animal welfare, client satisfaction, clinical satisfaction and potentially business profitability.

Definitions:

Routine surgery will cover canine and feline neutering, and any other surgery in the absence of pre-existing infection or conditions which may predispose to post operative infection.

A Post Operative Complication will be defined as "anything other than a completely uneventful recovery from surgery"

Methodology:

The incidence of POC's following routine surgery has not been measured before this audit was put in place in our practice. In order to attempt to reduce the incidence of POC it was first necessary to measure it. During May – July 2005 books were kept at Hatch End and Bushey operating theatres to be filled out after every suitable operation was completed. The following information was recorded:

- *Duration of surgery*
- *Type of surgery*
- *Every suture material/skin glue used in the op*
- *The site of each suture material and suture pattern used*
- *Gloves, gown or mask usage*
- *Post operative notes and complications were filled in as appropriate*

Cat castrates were not recorded in the books given the lack of data to record and the ease of obtaining the data straight from the computer.

Once the three month period was over the data collected would be analysed and then appropriate changes would be made to endeavour to reduce the incidence of POC in another 3month period (October 2005 – January 2006).

Breakdown of results:

	<i>Number of procedures</i>	<i>Number of POC</i>	<i>Incidence (%)</i>
<i>Bitch speys</i>	<i>25</i>	<i>11</i>	<i>47.0</i>
<i>Dog castrates</i>	<i>19</i>	<i>5</i>	<i>26.0</i>
<i>Cat speys</i>	<i>24</i>	<i>2</i>	<i>8.3</i>
<i>Cat castrates</i>	<i>15</i>	<i>0</i>	<i>0.0</i>
<i>Other</i>	<i>12</i>	<i>3</i>	<i>25.0</i>

<i>POC</i>	<i>Number of POC</i>
<i>Suture reaction</i>	<i>11</i>
<i>Scrotal haematoma</i>	<i>2</i>
<i>Further analgesia required</i>	<i>2</i>
<i>Clipper rash</i>	<i>2</i>
<i>Wound infection/breakdown</i>	<i>1</i>
<i>Death (related to surgery?)</i>	<i>1</i>
<i>Client dissatisfaction?</i>	<i>1</i>

REVIEW OF CLINICAL AUDIT PERIOD 1: May – July 2005

By looking at the results above and on the spreadsheets some general conclusions can be drawn:

- Bitch speys have the highest incidence of POC
- Suture reaction is by far the commonest POC
- Vicryl intradermal and subcutaneous stitching is involved far more commonly in suture reactions than the other suture materials used.

These results cannot be considered statistically significant given the small numbers involved, but given the lack of any other data to use and the need to obtain an incidence of POC at Blythwood Vet Group to continue the audit then there is no alternative.

The actual incidence POC is far higher than I would have expected, especially in bitch speys. Whilst the incidence is high, only 4 of the 20 POC required any further medical or surgical intervention.

Limitations of the audit:

1. POC or not? One of the main difficulties in this audit was deciding what constituted a POC. It is very subjective and whether it is recorded as a POC or a normal recovery will vary between individual clinicians, individual animals and their own tolerance of surgery, as well as a client's perception of their own animal's state of wellbeing and their own interpretation of how an animal should recover from an operation.

2. Data collection: the books were not filled out for every suitable operation. I suspect this was due to time constraints and the potentially unpredictable nature of work in a busy small animal practice. The nurses filled out the books most of the time. As such, I used computer records as well to look at POC, however on the clinical notes not all the information was recorded so in these cases I was only able to record presence or absence of POC and not suture type, pattern etc.



3. Operation type: *I do not think the inclusion of other operations such as cruciate repairs, superficial tumour removals, thyroidectomies was suitable for this audit. These animals are in for pathological conditions all of which will, to some extent, lead to a degree of compromise to their immune systems prior to any surgery taking place. Neutering operations are only carried out on (generally) young and healthy patients.*

4. Drawing conclusions: *I have been aware since I first started this audit that it could run the risk of looking like a clinical trial of suture material, which is not the intended purpose. Any changes made are based purely on the subjective data collected during the audit period and are not set in stone. We may find that implementing changes to suture materials makes no difference, however it is an easy change to make and can always be changed back again.*

5. Standardising surgical protocols: *By making changes based on data collected and implementing them we inevitably reduce clinical freedom. This may reduce the willingness of staff to continue to be motivated and happy to participate in auditing.*

CONTINUING THE AUDIT:

Following a meeting of the clinical audit team in September 2005, at which the findings of the audit were discussed with all clinical staff, the following changes were made:

- 1. Vicryl was not to be used for any internal suturing*
- 2. Only neutering operations were included in the second audit period*
- 3. A template was set up on the computer so that when a spay or castrate was carried out, basic information about the protocol used was stored.*
- 4. Gloves, gown and mask were worn for bitch spays and dog castrates, for cat spays and castrates gloves and mask were worn. There were some objections given that all veterinary staff wear glasses and steaming up is a problem.*
- 5. As well as recording the incidence and type of POC the need for further medical or surgical intervention was noted, as many POC do not require any further action. Each operation was classified according to the following grading system:*

1= no abnormality present

2= abnormal but no treatment necessary

3= abnormal - medical treatment required

4= abnormal - surgical intervention required

5= fatality

RESULTS OF FIRST AND SECOND AUDIT PERIODS:

Results of first audit period May – July 2005

Results of second audit period October 2005 – February 2006

	Number of procedures		Number of POC		Incidence (%)	
	1 st audit period	2 nd audit period	1 st audit period	2 nd audit period	1 st audit period	2 nd audit period
Bitch speys	25	22	11	8	47	36
Dog castrates	19	24	5	7	26	29
Cat speys	24	57	2	1	8.3	1.8
Cat castrates	15	53	0	0	0	0

Using the grading system 1-5 as described above the following comparison between the first and second audit period is shown below:

Graded results: Post op complications audit session 1 May- July 2005

Post op complications audit session 2 October 2005 – February 2006



	<i>Number of patients experiencing POC (1st audit period & 2nd audit period)</i>					
	<i>Grade 1</i>	<i>Grade 2</i>	<i>Grade 3</i>	<i>Grade 4</i>	<i>Grade 5</i>	<i>Total</i>
<i>Bitch speys</i>	<i>13</i>	<i>8</i>	<i>3</i>	<i>1</i>	<i>0</i>	<i>25</i>
	<i>12</i>	<i>4</i>	<i>4</i>	<i>0</i>	<i>0</i>	<i>22</i>
<i>Dog castrates</i>	<i>14</i>	<i>4</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>19</i>
	<i>18</i>	<i>6</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>24</i>
<i>Cat castrates</i>	<i>15</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>15</i>
	<i>53</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>53</i>
<i>Cat speys</i>	<i>22</i>	<i>0</i>	<i>2</i>	<i>0</i>	<i>0</i>	<i>24</i>
	<i>56</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>57</i>

Grade 1 = no abnormality present

Grade 2 = abnormal but no treatment necessary

Grade 3 = abnormal - medical treatment required

*Grade 4 = abnormal - surgical intervention
required*

Grade 5 = fatality



DISCUSSION

Following the changes to surgical regimes after the first audit period (no intradermal suturing, no vicryl, gloves, gown and mask worn etc), there has definitely been a reduction in POC in bitch speys. Again as with the first audit it is not possible to say these figures are statistically significant but there is a general trend towards a lower incidence of suture reactions and those requiring post operative antibiotics for wound related problems. It is not possible to say which of these changes has made the greatest contribution to this, however all the changes have been easily made and I would see no reason not to continue. It is interesting to note that during the period of both audits only one bitch required further surgical intervention, all other POC either needed no treatment or were treated with antibiotics alone. In the second audit period there were only two wound related problems which required antibiotics, the other bitches requiring medical treatment were for diarrhoea/vomiting following surgery.

The change in the PDC in dog castrates is disappointing as it seems to have risen slightly, but overall the number of dogs requiring any medical treatment is very low (only one in each audit period).

Cat speys and cat castrates already have a very low incidence of POC, and I do not feel the changes implemented made any real difference.

PLANS FOR THE NEXT AUDIT:

Restrict the audit to bitch speys and dog castrates as the figures of POC for cat neuters is very low and I do not feel that there is much room for improvement

Avoid intradermal suturing for all operation unless there are good reasons not to (eg – very aggressive dog, owners moving house etc)

Keep up the wearing of gloves/gown/mask as per the last audit

ANALYSIS OF AUDIT SIX

Step 1: Prepare for the audit process

This area of audit is of obvious importance to patients, their owners and every practice that wishes to ensure it is upholding acceptable standards of surgical care. The publicity afforded to cases of MRSA that have occurred postoperatively in pet



animals may also focus attention in this area, and it is specifically mentioned in the RCVS PSS guide as an area suitable for audit. Preparation involved reviewing current practice and performance, and setting up a system to record operative procedures and postoperative complications, involving the nursing team as well as veterinarians.

Step 2: Establish guidelines

This audit is primarily an outcome audit, but if the outcome suggests that there is a need to look at the processes underlying it, then these need to be audited as well. The information required for a process audit was collected from the start, and when upon review, it was decided that there was scope for improvement, the cases were individually reviewed and appropriate changes to the guidelines put into place.

Step 3: Select criteria and measure performance

The measurement of the criteria of exactly what constitutes a POC is of crucial importance to this audit, particularly if data is to be exchanged and compared with other centres. Initially, a POC was taken to be any deviation from a completely normal recovery, but this broad definition encompassed many events that were of very minor significance. After review, and following discussions with the MSc clinical audit group (see below), this was changed to a grading system that was designed to minimise any subjective bias, as it was based solely upon any action that needed to be taken as a result, rather than a clinical assessment of the wound or the patient. The inclusion criteria were changed to just surgical neutering of male and female dogs, in order to minimise other external factors that could influence the results.

Step 4: Assess outcome and maintain improvement

This audit clearly demonstrates how the whole clinical team met and agreed on changes to our surgical guidelines as a result of the audit process. The interpretation of the changes in the incidence of POC's within the period of the audit is difficult to establish definitively (and was interpreted somewhat over-enthusiastically by the audit leader), particularly since the assessment parameters were changed during the audit period, in order to fit in with what other participants in the audit MSc group were doing, and so enable results to be compared.

This is an area of audit that should continue indefinitely, with the practice continually aiming to improve its performance, and with time, benchmark itself against other practices. It will be desirable to keep feeding back to the practice audit team comparative data on how the practice is progressing in its efforts to reduce POC's, in order to motivate them to keep up their level of concordance with the guidelines.

Summary

The auditing of POC's is a key area in maintaining standards of practice, and although it seems very simple at first sight, there are pitfalls that may adversely affect the data. These include:

- The inclusion criteria – it seems reasonable to use bitch speys and dog castrates as a marker for all surgery. Including other operations introduces much greater variability in the results, as some will have a predictably higher rate of POC's
- Defining a POC. This is particularly prone to bias is the surgeon's identities and POC rates are to be circulated to other staff members, and if the surgeons themselves are recording the POC's. The grading system aims to minimise any subjectivity; it would be possible to ensure that someone other than the surgeon who carried out the operation assesses the patient; and comparative data between surgeons may be of value if an individual is thought to be performing badly, but needs to be handled with great sensitivity.

The recording of surgical procedure for each patient in the audit is not necessary for an outcome audit, but has retrospectively produced very useful data on process. It is an example of how an outcome audit will then highlight the need for a process audit. The great temptation was to then go on and try to carry out practice-based research into topics such as the complication rates for different suture materials, but to provide statistically meaningful results that could be generalised to other practices would require an experimental design that was beyond the scope of this project. However, that does not mean that we cannot look at the data and see what seems to work best for us, and adjust our guidelines accordingly.



FURTHER DEVELOPMENTS

Because this is a pivotal area of audit, it was chosen by the clinical audit MSc group as an area where we would each try and carry out an audit using the same grading system, and share data on our outcomes. These would not be the same audit, as each practice will have different surgical guidelines, but the grading system made it possible to compare like with like. The aim is also to offer this as a template to other practices, with guidance on how to run their own audits, and an opportunity for them to forward their data to us for analysis and benchmarking.

As of June 1st 2006, data had been collated on POC's for 1429 routine surgical cases, and the data for the group as a whole and for my practice were run through the medical statistical package Epi-info, producing the following results:



Routing Neutering Complication Rate

Total Results Submitted

The following tables represent the total and percentage representation of each of the 6 outcome groups:

Outcome	Freq	Percent	Cum Percent	
Abnormal but no treatment necessary	110	7.7%	7.7%	☐
Abnormal requiring medical treatment	74	5.2%	12.9%	☐
Abnormal requiring surgical intervention	9	0.6%	13.5%	
Fatality of animal	1	0.1%	13.6%	
Lost to Follow-up	184	12.9%	26.5%	☐
No abnormality present	1051	73.5%	100.0%	☐
Total	1429	100.0%	100.0%	☐

95% Conf Limits

<i>Abnormal but no treatment necessary</i>	6.4%	9.2%
<i>Abnormal requiring medical treatment</i>	4.1%	6.5%
<i>Abnormal requiring surgical intervention</i>	0.3%	1.2%
<i>Fatality of animal</i>	0.0%	0.5%
<i>Lost to Follow-up</i>	11.2%	14.7%
<i>No abnormality present</i>	71.2%	75.8%



Results for Blythwood

01/06/06

All Outcomes

Outcome	Frequency	Percent	Cum Percent	
Abnormal but no treatment necessary	22	9.3%	9.3%	☐
Abnormal requiring medical treatment	9	3.8%	13.1%	☐
Abnormal requiring surgical intervention	1	0.4%	13.6%	
Fatality of animal	0	0.0%	13.6%	
Lost to Follow-up	3	1.3%	14.8%	
No Abnormality present	201	85.2%	100.0%	☐
Total	236	100.0%	100.0%	☐

95% Conf Limits

<i>Abnormal but no treatment necessary</i>	5.9%	13.8%
<i>Abnormal requiring medical treatment</i>	1.8%	7.1%
<i>Abnormal requiring surgical intervention</i>	0.0%	2.3%
<i>Fatality of animal</i>	0.0%	1.6%
<i>Lost to Follow-up</i>	0.3%	3.7%
<i>No Abnormality present</i>	80.0%	89.4%



Some statistically valid conclusions can be gleaned from these early figures. If the results and the 95% confidence limits for the first five categories of POC are compared between the total results and the Blythwood ones, although there may appear to be differences superficially, the 95% confidence limit results for Blythwood in each category overlap very significantly with the 95% confidence limit results for the total results, suggesting the difference may be due to a natural variability in the figures, rather than a difference in performance.

However, if we look at the last category of POC, "No Abnormality Present", we can see that the Blythwood 95% confidence range of 80.0 - 89.4% falls completely outside the group range of 71.2 - 75.8%. We can therefore conclude that a statistically significantly greater number of Blythwood patients had no abnormality present post-surgical-neutering than the group as a whole.

As more figures are collated, both locally and communally, the confidence range of the results can be tightened, and it may be possible to show statistically valid differences in other categories of POC. It may also be possible to show changes that occur over time, as revised guidelines are put into place, and perhaps even a trend for the overall figures to improve as the long term effects of the audit process kick in. These are potentially interesting developments, but are still in their infancy within the veterinary profession.



TABULAR SUMMARY

	Comments
Choice of topic	This is a critical area for audit, and one that any practice involved in the process should carry out. Other areas of surgical outcome could be audited, depending upon the nature of the practice. This is primarily an outcome audit, but also developed into a process audit.
Choice of criteria	This needed very careful planning, particularly since the data was to be shared with other centres. The grading system was a real breakthrough in this area.
Evidence base	There is very little evidence of what an acceptable standard of POC actually is, and what factors influence it, and current protocols are generally based upon what is perceived as "best practice". This is why a process audit is needed to investigate local factors that might be contributing to the rate of POC.
Standards used	No standards currently exist, and will vary depending upon the criteria used. A major outcome from the collaborative project with the MSc group and others will hopefully be to standardise criteria and compare outcomes, to allow benchmarking.
Use of IT	The details of surgical protocols used are entered onto each record, which can easily be traced via the invoicing function of the PMS. Sharing of data involves the use of Excel templates set up by the MSc group to allow further analysis and comparison.
Data validity	Although clinicians need to enter "POC" onto the reason for the re-examination for it to be automatically retrieved, data checking by calling up all canine neutering operations was simple and reliable. Some limited statistical analysis of the data with comparative groups was shown to be possible.
Teamwork	This involved a high degree of trust and co-operation between the nursing and veterinary teams.
Resources	Significant time required for data retrieval and analysis
Communications	Guidelines communicated well to clinical team.
Cost benefit	The cost of the audit procedure needs to be seen as an integral part of quality assurance for surgery. Where practices are competing with low cost neutering clinics, it may be a way in which they can demonstrate that their guidelines and performance are sound.
Key points	<ul style="list-style-type: none"> • A key area of audit that every practice should consider carrying out • Careful thought about the criteria used is necessary to reduce bias and to enable the meaningful comparison of data • Outcome audits enable the comparison of data and monitoring of performance, but they may well generate a need for further process audits.



4.9 Interviews and reflections of the practice clinical audit team

The preceding project activity sections looked at the direct effects of the audit process upon clinical practice, and this section is designed to probe the sociological effects that it might have had. It does this using two methodologies: firstly, face to face interviews, and secondly, by recording individual reflections produced by members of the audit team.

4.9.1 Clinical audit team interviews

Chris Whipp is a veterinary surgeon who was part of the original SPVS Masters Group and is now also working towards a DProf. He is trained in coaching, and has an excellent understanding of interview techniques and the requirements of my research. He agreed to carry out interviews of my clinical audit team, both before the audit process began, and at the end of the research phase. The aim was to gain an appreciation of what members of the team anticipated about the audit process at the outset, and how that had changed during the course of the research period.

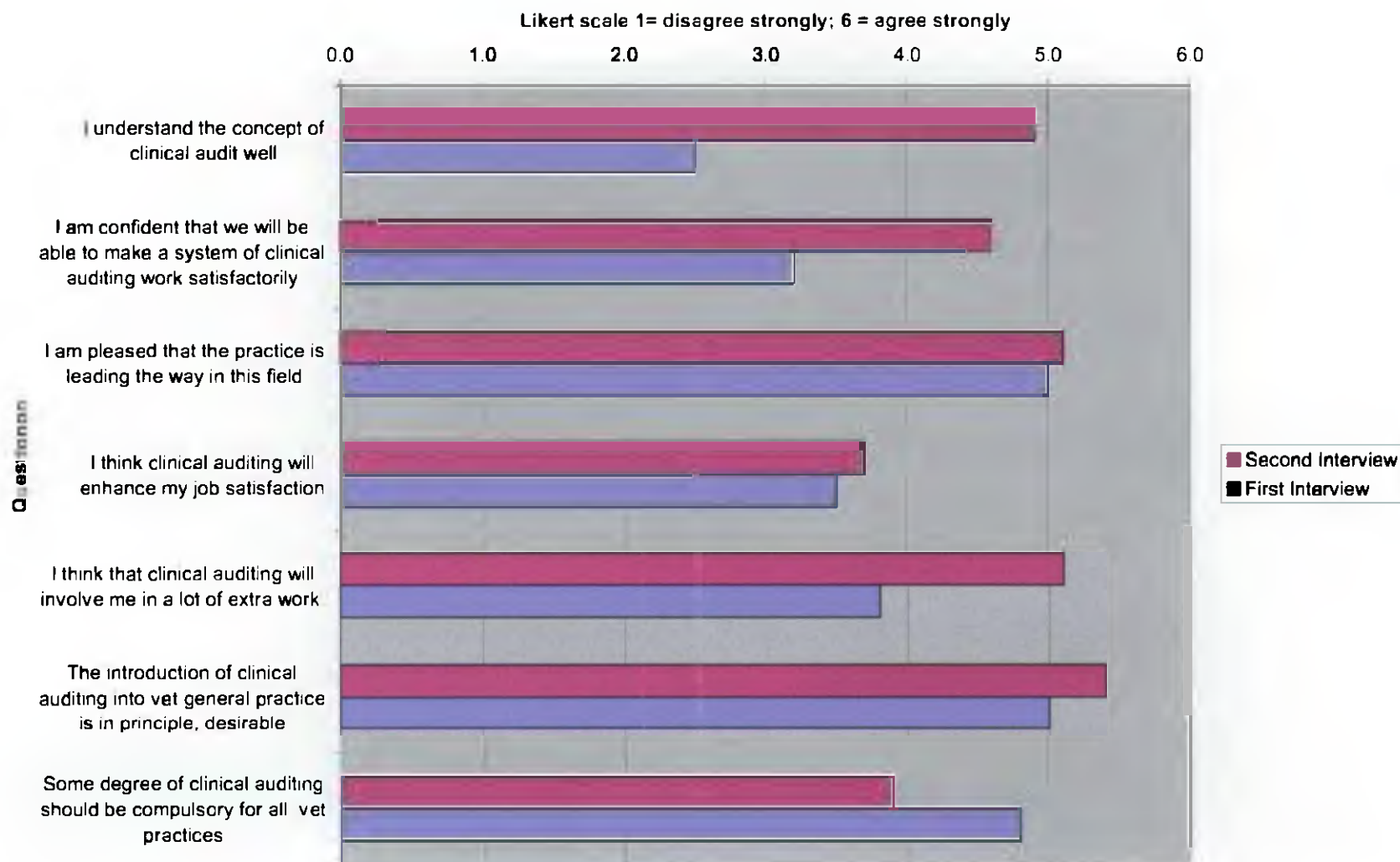
The interview design and analysis was based upon principles outlined in texts such as Brenner et al (1985) and Denscombe (1998) and was in two parts. The first section asked closed questions, where respondents were asked to score their reaction to a statement on a Likert scales, as described by Brace (2004) and Burton (2000), requiring the respondent to choose a response indicating varying degrees of agreement or disagreement to a statement. In this instance, we agreed on a six point scale from 1-6, from disagree strongly through to agree strongly. Having an even number of choices means that the respondent has to commit to answer either side of a neutral response, which I felt was preferable. This fixed scale response would make it easier to quantify changes in attitude from the first interview to the second, but the second section allowed a free expression of their views by asking open questions.

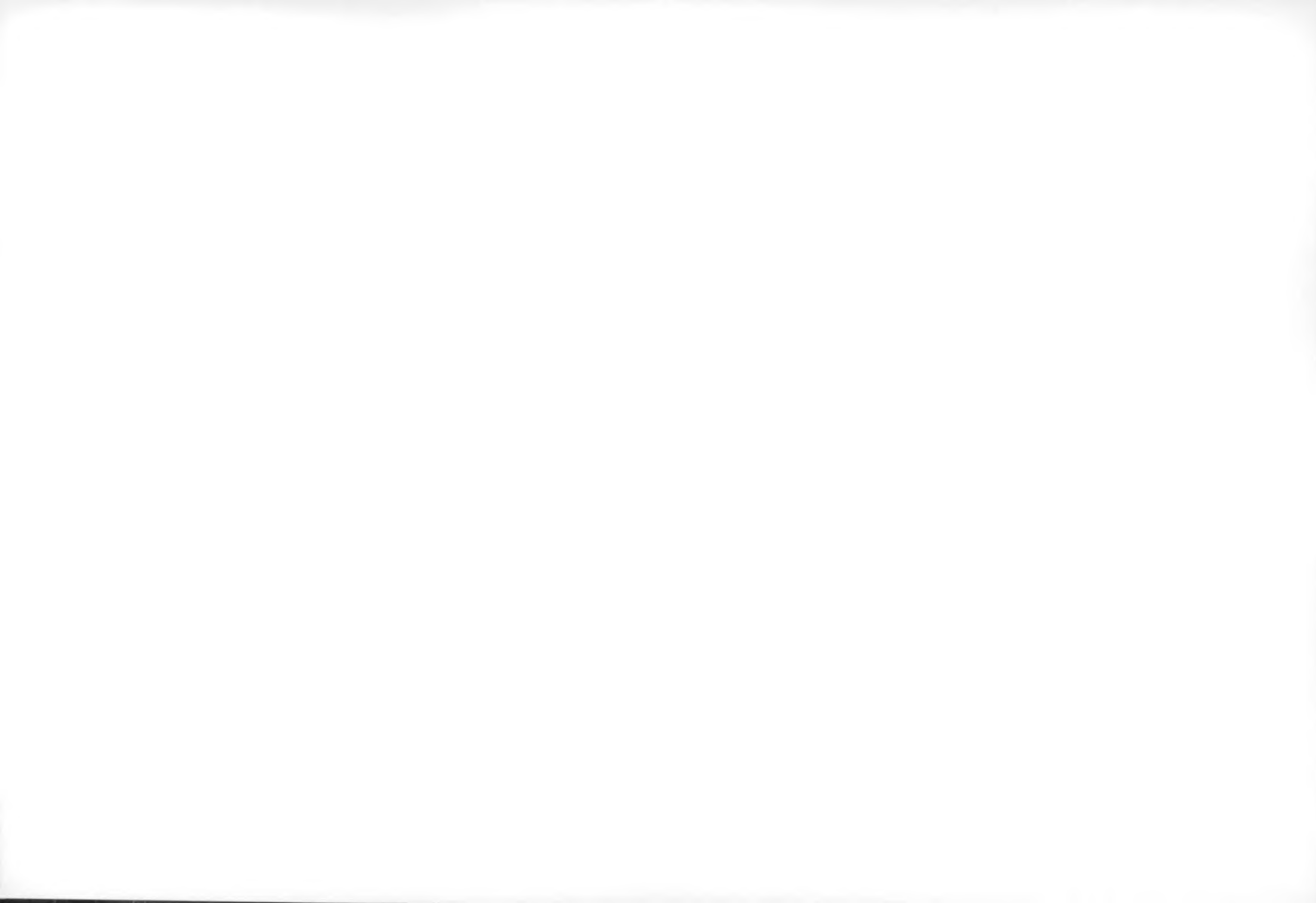
The interviews were held on a one to one basis with each member of the audit team, at my practice, as described by Chris Whipp:

Pre project interviews were completed on 30th September 2004 and post project interviews were completed on 7th December 2005. On the first occasion 4 veterinary surgeons, 2 veterinary nurses and the practice manager were interviewed and on the second occasion 3 veterinary surgeons, 3 veterinary nurses and the practice manager were interviewed. Each interviewee completed 7 closed ranking questions and then a semi-structured interview centred around four open questions. The interviews lasted approximately ten minutes per person, notes were taken and the interviews were recorded. A ranking sheet for the closed questions was also produced for each participant. The interviews provided good initial/final snapshots of views and attitudes to clinical auditing together with a documentation of their transformation over the course of the project.



Interview responses





This data illustrates the following points about how team members felt:

- They understood the process of audit significantly better after the audit project than before
- Having been through the process, they were more confident about being able to make it work satisfactorily
- They remained pleased that the practice was leading the way in this field
- They only mildly agreed that clinical audit would increase their job satisfaction, and this did not change.
- They became increasingly convinced that the audit process would involve them in a lot of extra work. Chris Whipp commented that the nurses agreed particularly strongly with this assertion.
- They strongly agreed both before and after the project that clinical audit was, in principle, desirable, but became less convinced (although they still agreed) that it should be compulsory

Apart from an increasingly negative impact about the amount of work required, particularly from the veterinary nurses, the response to the project was generally positive.

Summary comments from Chris Whipp about the interviews:

I feel the following general conclusions can be drawn from the interviews conducted.

- *Properly introduced, clinical auditing can be of benefit to the clients, animals, staff and practice*



- *Staff are apprehensive of change initially and appropriate support by way of instruction, inclusion in decision making, protected environment and protected time to complete the work is essential.*
- *Clinical auditing may be more financially beneficial to practices that has previously been suggested*
- *Conducted within a positive environment clinical auditing can have a positive effect on communication, teamwork together with individual personal and professional development.*
- *The time/resources demands are a significant issue that needs to be carefully addressed.*

4.9.2 Post-audit reflections from the audit team

The following are short but representative extracts from the clinician leading each audit listed. I have organised them under topic headings. Full reflections can be found in Appendix Three.

Initial concerns:

The first meeting created more confusion than light. Whilst it was clear Bradley had a clear aim and objective to how auditing should be run in our practice, I think all of us were concerned about, and had difficulty comprehending, the mechanics of the operation.

There was a concern that we were creating work for works' sake.

Getting to grips with an audit project is, in itself, quite difficult. Designing a project that has clear objectives, outcomes that can be easily measured, and is practicable in a practice environment, is not straightforward.



When I was introduced to the group discussing clinical audit, to be honest I did not really understand it at all. However, once we started the audit I began to see how it all fit together.

I am very confused as to the nature of what a clinical audit is. Are we looking at the effectiveness of applying specific protocols to improve clinical care, or are we studying the protocols themselves?

I hope this does not eventually lead to protocols for all things thus taking away our clinical freedom. I also think some parts of it could look like a clinical trial.

Audit design:

Having an area of interest to develop was key to my enjoyment of the process.

I was concerned that I should not clinically 'dictate' to my colleagues as to how they should approach cases but to provide a 'best practice' guide.

I found that you needed to set aside some time each month to check all the clients invited to the clinic had been rung if they had not yet attended and also for the struggling client that support really was needed and a phone call to them really could help.

Having run the audit this year, I could set up a much better protocol with computerised charts that could be filled in for each patient as the audit runs and would save much more time at the end searching for figures, graphs etc

The adoption of a specific project was crucial to the understanding of what we were all doing and in developing our aims and objectives.

Initially I thought it might be hard to implement the idea of clinical audit in practice. I think this was overcome by choosing a relatively simple protocol to audit.

Benefits of audit:

We have developed our clinical skills as a practice team significantly. The teams fears have been quelled.



It has enabled us to critically evaluate our clinical procedures and outcomes.

It has empowered members of our team, particularly the Vet Nurses, who I feel have enjoyed and responded to the challenge marvelously.

This high standard was at the forefront of my mind when relevant clinical cases came up in my day to day work, which in turn ensured that my patients received the highest standard of medicine.

I feel that the concept of clinical audit is potentially very beneficial, to veterinary practice both in setting and maintaining standards.

Barriers to audit:

What I find most difficult is being able to devote the time to it (including writing this), in amongst a busy work schedule, I don't get time in the day to sit down without interruption. The meetings are helpful but as usual time is always short and again it is difficult keeping on the subject without going off at tangents

I do have slight concerns about reducing clinical freedom. However, if auditing is to become commonplace and practices have to show they are monitoring and improving their standards then such changes are inevitable.

I worry that it is too complex, and trying to measure too many things

Changes in attitude post audit:

Once finalised and adopted I felt much more comfortable with the whole concept.

Overall I feel the clinical auditing process to be of value in our practice.

I feel it has been very good that we have been able to demonstrate benefit to our clients and their pets and that this has not just become an administrative or academic exercise.



I thought the audit that the nurses carried out was useful, interesting, relevant, and measurable (in part) and the criteria related to important aspects of care

Overall I think that the clinical audit is very worthwhile, I now have a good idea of what it involves and can see plenty of areas within the practice where auditing could be useful. What I like about it is that changes are made which are based on evidence collected within our own practice.

General:

It is important that this new concept of audit is 'sold' to our profession in the right way. This a valuable tool to improve standards of care and services to our clients and pets but I hope that this is not seen as just another level of regulation within the profession. I think there could be a danger of this as a compulsory element is attached to the RCVS practice standards scheme.

If a little time were given to members of staff carrying out the audits, they could be an extremely valuable tool for us to achieve better patient and client care and improve practice turnover



4.10 The external research environment

4.10.1 External data – focus group

A focus group session was held with the six members of my MSc clinical audit group at the Royal College of Veterinary Surgeons on the 21st of January 2006. I used a summary of some of my research conclusions as a framework for discussion.

See Appendix Four for a full transcript of the session.

The questions being dealt with are outlined in bold below, followed by a summary of the points raised in the group session in red, and my own comments in blue:

The areas of clinical veterinary practice that are most suited to being audited are:

- **Commonly encountered**
- **Amenable to measurement**
- **Have room for improvement in performance**

- *commonly encountered most important*
- *ideally you will look for all three, but you may not know until you finish the audit*
- *4th category – uncommon but important*

POINT 1 – it may be important to audit some issues not because they are common, or because you may know there is a need to improve them, but because they are important, even if things go wrong in isolated cases. This may be more of a critical incident review than a true audit.

The group went on to discuss whether outcomes or processes should be used as criteria. Interestingly, this was not a question that I had posed, but nevertheless one that needed answering. This suggests that even at this early stage, the participants were functioning well as a focus group.



- *outcome no use unless you know about the process*
- *generally a process audit follows an outcome audit – that is a natural progression in most cases*
- *we tried to do a process audit as a group which was difficult, but we found it easy to compare standards using an outcome audit by dividing up the outcomes into easily defined blocks. – we then needed to assess processes internally to see if there was any room for improvement*
- *you go back and look at process if a problem identified with the outcome audit*
- *there may be resistance to process audit in a group and best to start with outcomes to see how you are performing first*

I interjected - are you not just saying there need to be guidelines? There was general agreement with this. There had been a mildly heated debate between DT and the rest of the group about just how important it was to measure processes, but retrospective analysis does not suggest that this is a key point.

POINT 2 - What was key was that when we tried to compare standards as a group, we were only able to do so when we looked at outcomes rather than processes. Upon reflection this is logical – it is impossible to compare processes between practices that may have completely different ways of doing the same task, and in most instances there would be little hope of unifying them, but comparing outcomes is less problematic (although it does raise issues that we did not discuss, such as comparing like with like). Therefore, practices can compare outcomes to generate and compare standards, and then need to carry out internal process audits if they identify a potential problem.

Although there is no commonly agreed coding system, the recall of relevant data using current PMS's is relatively easily achieved, although there is inevitably a need for some manual processing of the data produced.

- *tiny practice but merging with another and difficult to standardise data entry between the two practices*
- *you need to be able to build up a system to structure data input logically*
- *it should be possible to price with a nil fee to help pull it out*



- *not tried but believes it can be done*
- *tried to access castration data and failed – data input wrongly*
- *New system has “AI” and could code in banding for complications but present decision trees useless*
- *own system can confidently query and report on data providing it is inputted properly*
- *consensus - achievable but not easy.*

The ease with which practices could draw out the information they needed for audit varied greatly from one practice to another, with some having very little problem and others needing to do it manually. Certainly, not everyone found it straightforward.

POINT 3 - The major problem was with the inputting of data. There was a need to raise awareness among vets to realise the importance of data extraction when dealing with their software suppliers, and of the need to train staff in the process of orderly data entry. Overall, extracting the data from current systems was achievable but not easy.

Common pitfalls:

- **Trying to carry out in-practice research rather than audit**
- **Trying to achieve too much thus making an audit over-complicated**
- **Picking an area of audit that does not occur commonly enough**
- **Poor communications within the practice and with clients**
- **Not allowing enough “protected time” to carry out the process**

- *we have already talked about 2&3*
- *relationship between research and audit is interesting – evidence is often lacking and gathering baseline data is a form of primitive research which leads into the audit cycle*
- *in practice research important – the pitfall is calling it an audit*
- *audit is about change and achieving a standard.*
- *gathering evidence is research*
- *no. 5 is very important and involves bringing the team with you*



- *also need to stick to aims – specific criteria and stick to them rather than fudging*
- *need to make it clear the compliance is for the benefit of the animal rather than yours*
- *If we add a number 6, trying to change the parameters of the audit part way through, would anyone disagree with these common pitfalls, or add to them – unanimous agreement.*

POINT 4 - There was general agreement with the common pitfalls that I had proposed, with the possible exception of 3, when carried out for important issues, although even then it was recognised it would not be wise to audit uncommon conditions when starting out on the process. One of the group felt that changing tack midway through an audit was also a common pitfall. There was some discussion about the difference between in practice research and audit, but I did not think it really reached to the heart of the matter. Since I did not want to stamp my imprint on the discussions at this stage, I made a note to refer back to it at the end of the session, and moved on.

Veterinary and support staff are generally positive to the audit process, providing they are involved in its instigation and feel some degree of ownership of the project.

- *non vets welcome it – if anything, vets are more wary.*
- *Good turnout of non-vets at Roadshows*
- *One of our nurses attended one of the Roadshows and she was the main reason we achieved our post-op complications audit*
- *one group happy to audit another group but not themselves*
- *...we found the opposite. They didn't want to comment on the Boss*
- *if it is not your practice, first you have to convince the Boss*

POINT 5 -There was unanimous agreement to this concept, providing that the whole clinical team are actively involved in the audit process.

VN's can play a leading role in the audit process



- *difficult if the culture not already there*

POINT 6 - No dissention to this contention with the proviso that the whole clinical team have to be onside in the first place. I enquired if anyone carried out audit without the use of nurses. One respondent pointed out it was possible with retrospective audits but they all agreed they played a significant role.

The benefits of clinical audit are:

- **As a management tool to monitor and improve performance**
- **To conform with the RCVS practice standard guidelines for T2 & T3**
- **To reassure the public**
- **To improve professional job satisfaction**
- **To generate increased practice income by motivating staff and improving owner compliance**

- *1 also potentially a risk – take away management and put in clinical... but that would take away some commercial benefit. It is important to be able to sell audit to the profession*
- *(there is a) balance between making money and curing animals*
- *(ref 3 there is a) need to educate the public and have not discussed risks in terms of statistics, as most owners in their heart think success rates are 100% so need to be educated to understand it in a way that isn't threatening*
- *(ref. 2&3) we do audit but it only affects a small part of what we do*

POINT 7 – It was suggested that the first point be amended to " As a tool to monitor and improve performance".

I then enquired as to whether audit can act as a marker for the overall performance of a practice, even in areas that it does not actually audit?

- *in general terms it may, but the link is tenuous*
- *there should be a big difference in a practice that audits and one that does not*



- *public unsure why one practice is more expensive than another and audit can show why there are differences*
- *an additional benefit of audit is that if we don't do it ourselves it will be forced upon us*

POINT 8 – there was a general feeling that at the current time auditing can act as a very general marker of quality, and may be used to justify the cost of a higher standard of care to the general public.

POINT 9 – Another benefit of auditing now is that if we don't do it ourselves, it may be forced upon us externally

There was an agreement that the five benefits listed were sound, with the possible addition of avoiding having it imposed upon us. One key additional point was that the term concordance was strongly preferred over compliance. Compliance implies enforcement of what the practice says whereas concordance involves agreement on a joint decision using audit and clinical evidence to reach that point.

POINT 10 - The term concordance was strongly preferred over compliance. Compliance implies enforcement of what the practice says whereas concordance involves agreement on a joint decision using audit and clinical evidence to reach that point

The lessons we have learnt as a group from trying to set and compare standards were —

- *the complete lack of EBVM to set benchmarks*
- *keeping it simple.*
- *defining what a standard means.*
- *discovering how difficult to establish a standard*
- *how we went in a full circle.*
- *defining the difference between protocols and guidelines*

POINT 11 – There is a complete lack of EBVM to set benchmarks

POINT 12 – It is important to keep audits as simple as possible



POINT 13 – It is important to define what the term "standard" means

POINT 14 – The difference between protocols and guidelines needs to be defined. The latter may be preferable in many practice circumstances as it implies assistance rather than compulsion

comments on the learning process:

- we had to see what each of us did in our own practices and find common ground.*
- we had to struggle with it and find out how difficult it was for ourselves*
- we thought it was simple but it wasn't.*
- hard for people who think they can download a form on the net and get an audit and standards back*
- it shows it is possible providing simple and broad enough bands to catch everything but simple enough to be understood by everyone*
- it will be relatively straightforward for practices to use.*
- submitting info not an audit in itself, they are just setting a standard – they must use it within their practice for the purpose of audit, and there is a big difference*
- only tried that one area – we need to try another to see if same principles apply*

There was a clear feeling that the group had struggled as individuals to draw up criteria for an audit of post operative complications that could be compared with other practices, and that we had eventually cracked it as a group in a simple yet effective way, that should potentially be of significant benefit to the profession.

POINT 15 - It was noted that submitting figures to compare performance did not mean that the practice was carrying out the audit cycle.

Clinical audit is a practicable and effective means of maintaining a high standard of veterinary general practice.

- a part but not in itself*
- a catalyst*



- *Maintaining suggests just keeping them where they are, but can also involve reaching higher standards*
- *also a means of setting that standard*
- *an aid rather than a means*

This statement was brainstormed by the group, and the points they made were taken on board to reach a revised statement with which everyone agreed:

POINT 16 - "Clinical audit is a practicable and effective tool to help raise and maintain the standard of veterinary general practice".

At the end of the session I took a more proactive role in the group and returned to the subject of the difference between in practice research (IPR) and audit. I started with the question: "What would you say are the aims of IPR compared to the aims of audit".

A lively debate ensued, with most of the group maintaining that establishing a standard as the first part of the audit process was a valid form of IPR, and was necessary, since there was such a paucity of research data to go on. This was followed up with further online discussion about the subject.

*This was a very useful discussion, because it moved my own viewpoint from one where there was a marked difference between audit and IPR, to one where it is important to realise that there is a marked difference between audit and **scientific IPR**. This is critical, because scientific research carries all sorts of requirements for statistical validity that enable the results to be generalised to other contexts, but this is not true of qualitative research. It was wrong of me to make the assumption that when I said the word "research", my audience would automatically take that to mean scientific research (although in a more general veterinary context that would often be the case).*

*POINT 17 - there is a marked difference between audit and **scientific IPR***

4.10.2 External data – questionnaire

An online questionnaire was drawn up, in accordance with the methodological considerations outlined in the previous chapter, and distributed via email to the mailing list that had been established primarily from the attendees at the first three of the SPVS clinical audit Roadshows. Therefore, this is not a representative sample of a true cross-section of the veterinary profession, as the database consists of veterinary surgeons, practice managers, and support staff that have gone to the expense and effort of attending one of these events, and are therefore likely to be more highly motivated than average. This does not matter in this instance, as I am exploring the opinions and attitudes of veterinarians and support staff that have had some active experience in the area, rather than those that might merely be hypothesising. As quite a few members of the PDSA attended my Roadshows and so were on the mailing list, this organisation is inordinately represented.

The questions were based upon the draft conclusions of my work-based research, as modified after the focus group session, and were posted online using Questform, a free web-based questionnaire service that collates the feedback into an Excel format, greatly simplifying data entry (see Appendix Five). The questionnaire included some background data that was also required by Sally Everitt, a member of my MSc clinical audit group. Members of my Doctorate learning set and my clinical audit MSc group provided the pilot group. Their responses are outlined in Appendix Five, and almost all of them were incorporated into the version that was finally posted.

An email was sent out to attendees at the SPVS Roadshows, and a very similar one to the SPVS online discussion list. A second request was sent out after two weeks, and after a total of three weeks the questionnaire form was closed. A total of 118 responses were received by that time (84 after the first two weeks and a further 24 after the reminder). Since there are approximately 200 members of the SPVS discussion list and just under a hundred on my Roadshow email list, this was a response rate of approximately 40%, which is extremely high for a survey response (particularly since some of the addresses on my Roadshow list would also be members of the SPSV discussion forum). The second part of the survey, relating specifically to my research (from Question 10 onwards) was only answered by those

respondents who said they had some experience of the audit process – this was 55 out of the 118.

QUESTIONNAIRE RESULTS

Questions 1 – 4 deal with background demographic information and internet usage, and the results of them are reproduced in Appendix Five.

Q 5. Which of the following organisations would you prefer to see taking the lead on Clinical Audit for the veterinary profession?

	RCVS	SPVS	BVA	Coalition of specialist divisions	Independent body	other	Do not consider that a lead body is necessary
Total	18	20	19	27	3	4	14
Percentage	17	19	18	25	3	4	13

Q 6. Would you be interested in using any of the following?

Examples of audits which could be adapted to your own practice	83%
Audit templates to follow	78%
Sharing results of audit (anonymously)	77%
An e-mail discussion list	51%

Q 7. Which of the following best describes the situation in your practice?

Clinical audit is already an accepted part of our practice	8%
We have started to introduce clinical audit into the practice	38%
We do have some protocols for staff but are not yet carrying out any audit	30%
We would like to introduce clinical audit but have not yet started	10%
We are not intending to carry out clinical audit at this time	13%



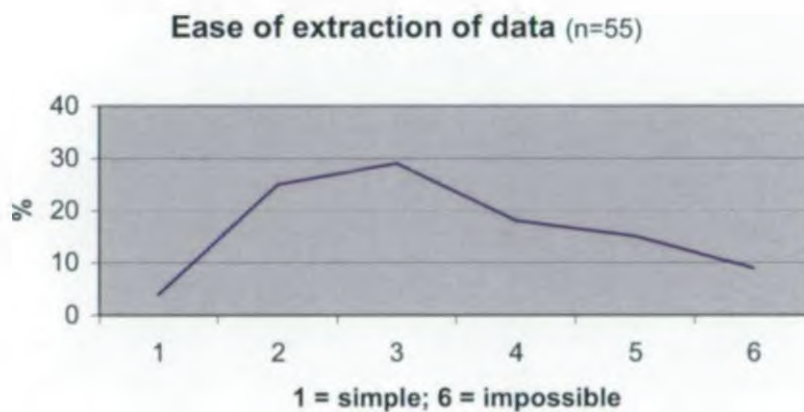
Q 8. When you have carried out an audit, have you audited a process (i.e. how things are done) or an outcome (i.e. what results have been achieved)?

	Process	Outcome	Both	Uncertain
Total	7	20	24	5
Percentage	13	36	43	9

Q 9. Do you use a computerised database for your clinical records?

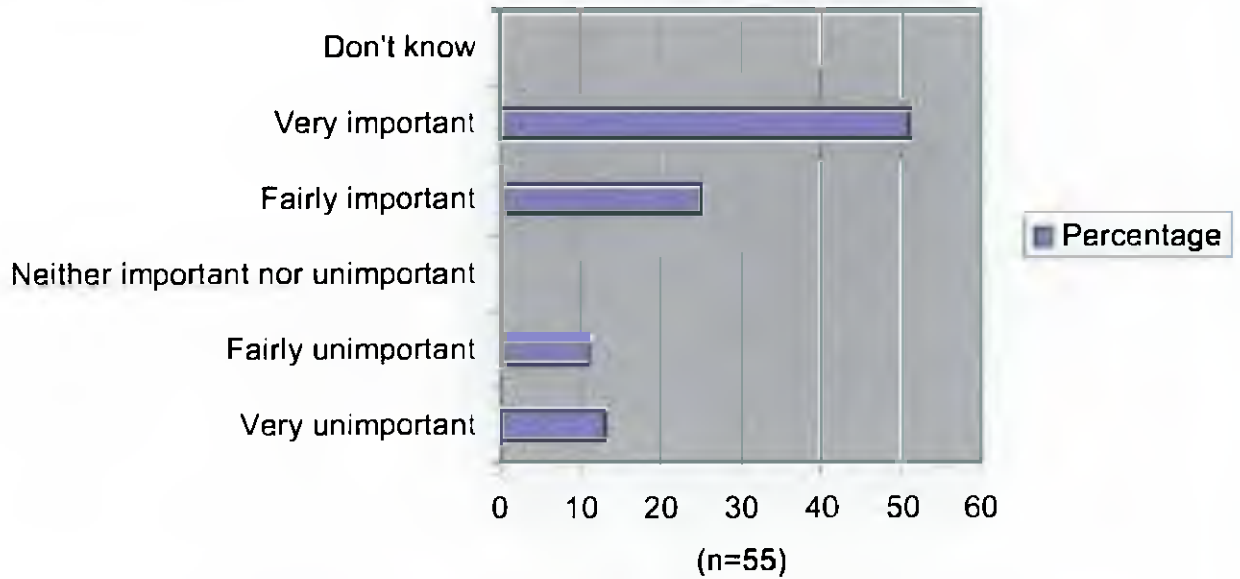
	yes	no
Total	53	3
Percentage	95	5

Q 10. How easily have you been able to extract the information you needed for audit from your practice management software (assuming the audit was run prospectively rather than searching for retrospective data)?



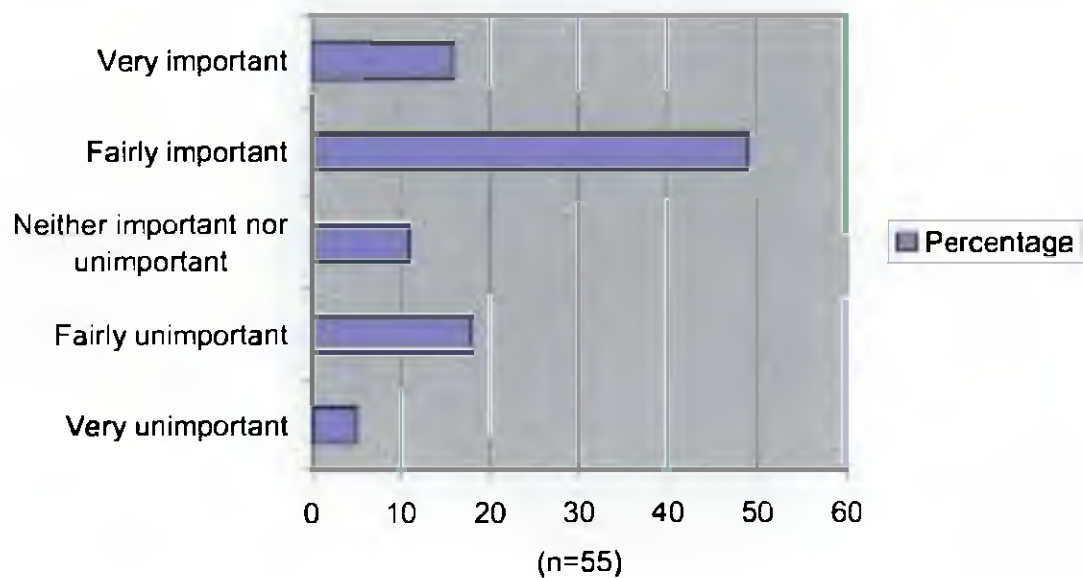
Q 11. When choosing an area for audit, please rate how important each of the following factors would be in your choice of topic:

a) It should be amenable to measurement:



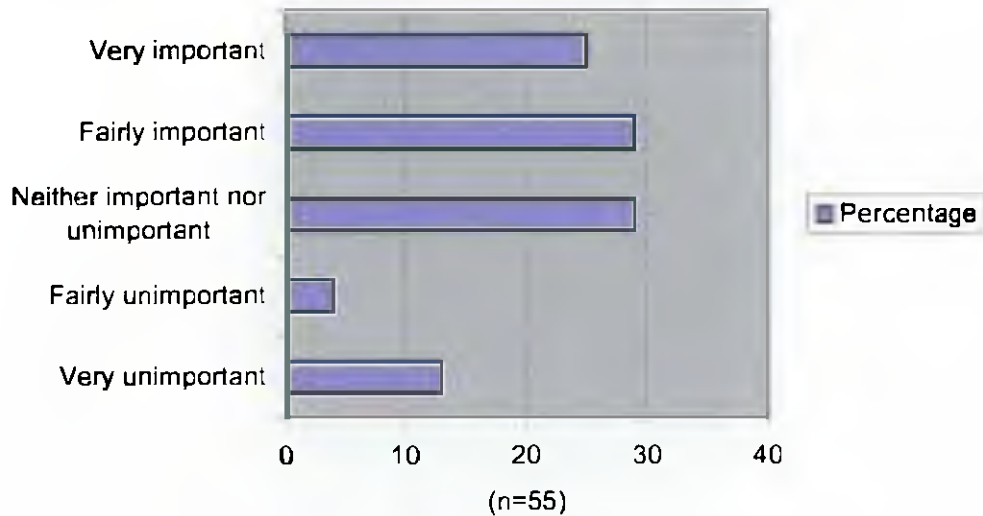
(The most popular answer to this question was 'Very important'.)

b) The condition should be commonly encountered:

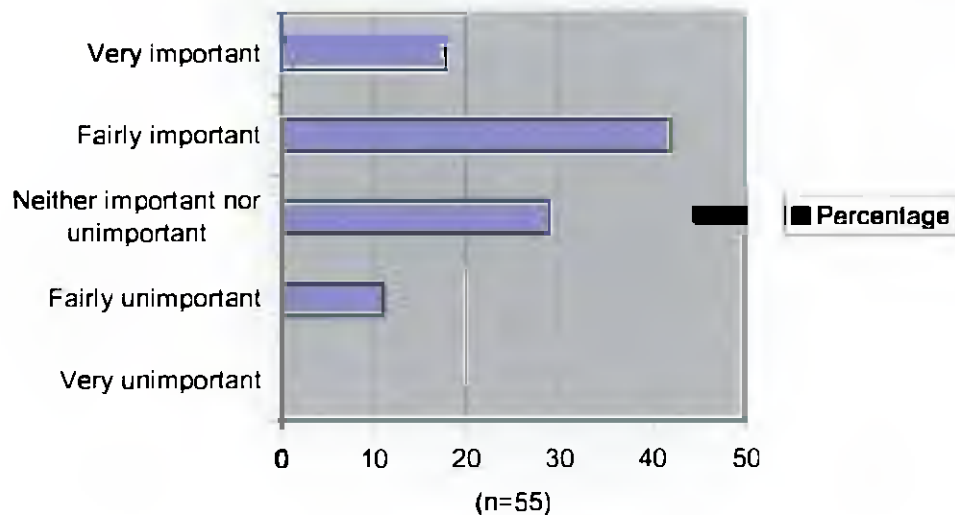


(The most popular answer to this question was 'Fairly important'.)

c) There should be room for an improvement in performance:



d) It should be of critical importance to the practice eg anaesthetic death:



(The most popular answer to this question was 'Fairly important')

Other

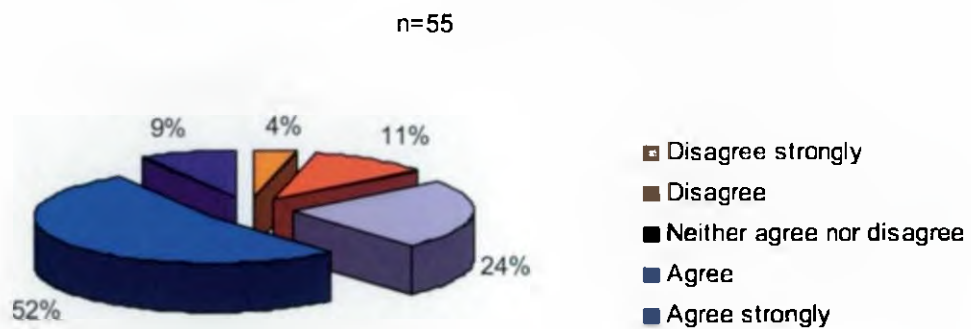
- i) Cost implications - ie expensive and life-threatening condition (5)
- ii) Team perspective on the importance and usefulness (3)
- iii) Relevance to client and patient (2)

iv) Easy to set up and maintain (2)

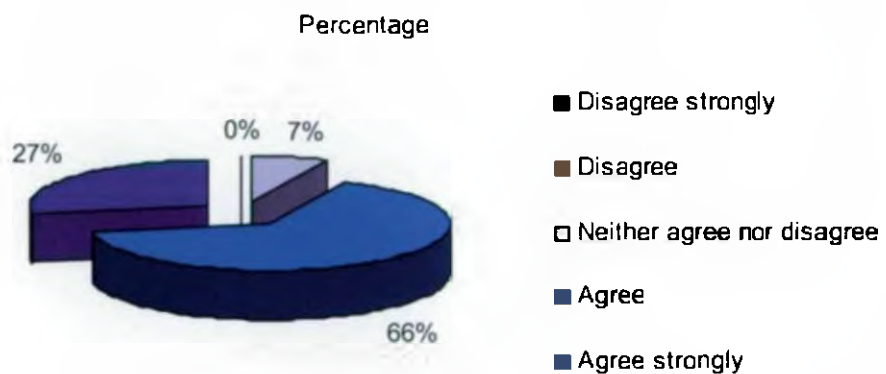
v) Issues brought up by ext papers, research; comments, clients etc.(1)

Q 12. From your experience, please rate how strongly you agree that each of the following can be a common pitfall with the audit process:

a) Trying to carry out in-practice scientific research rather than audit:

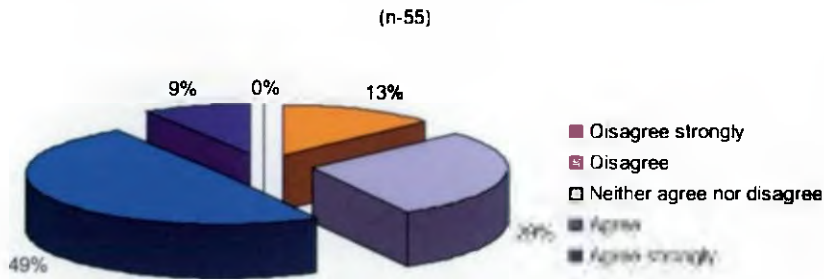


b) Trying to achieve too much thus making an audit over-complicated:

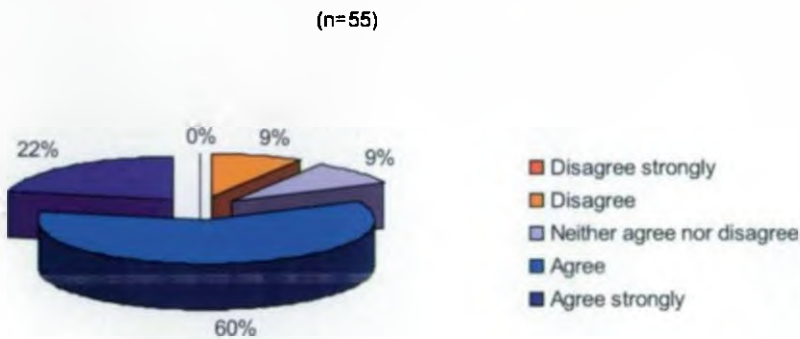




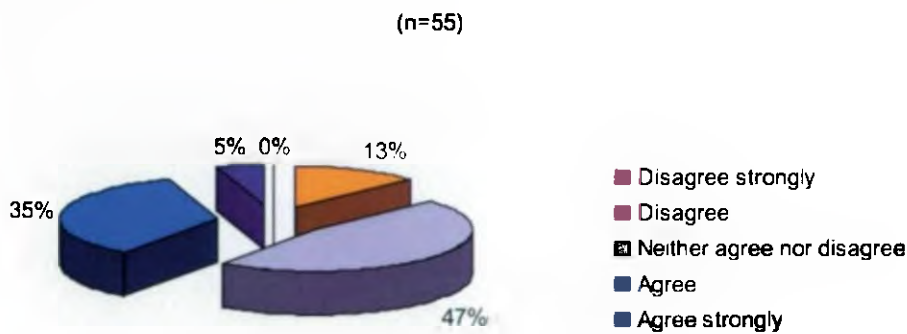
c) Picking an area of audit that does not occur commonly enough, unless it has been identified as being of particular importance to monitor:



d) Poor internal communications to encourage staff to participate:

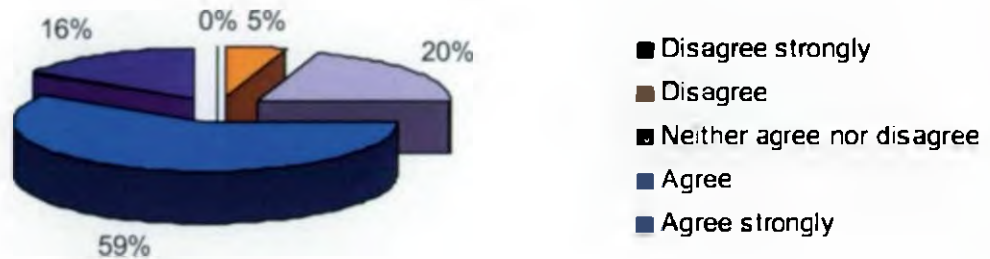


e) Poor communication with clients to encourage optimum compliance:



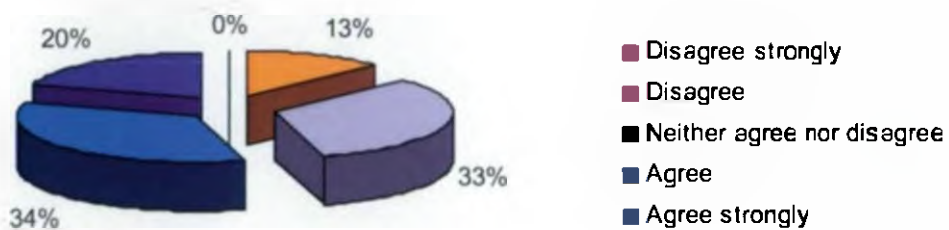
f) Not allowing enough "protected time" to carry out the process:

(n=55)



g) Trying to change the parameters of the audit part way through:

(n=55)



Others:

Not planning the process thoroughly before starting (3)

Not communicating or acting upon the results (2)

Not obtaining full co-operation from staff involved

Making it too complicated (2)

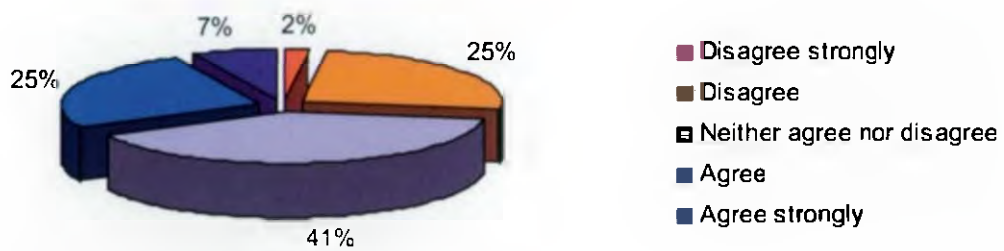
Not introducing the necessary cultural change (2)

Difficulty with measuring performance (2)

Q 13. Please rate how strongly you agree or disagree with the following statements:

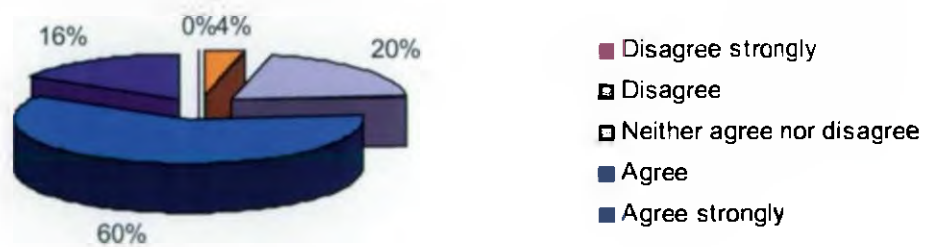
13a) "I have found it difficult to find reliable evidence to enable me to establish sound guidelines."

(n=55)



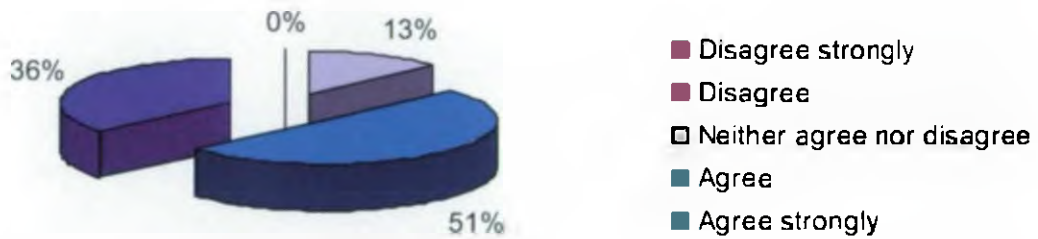
13b) "Veterinary and support staff are generally positive to the audit process, providing the whole clinical team are actively involved in the audit process."

(n=55)



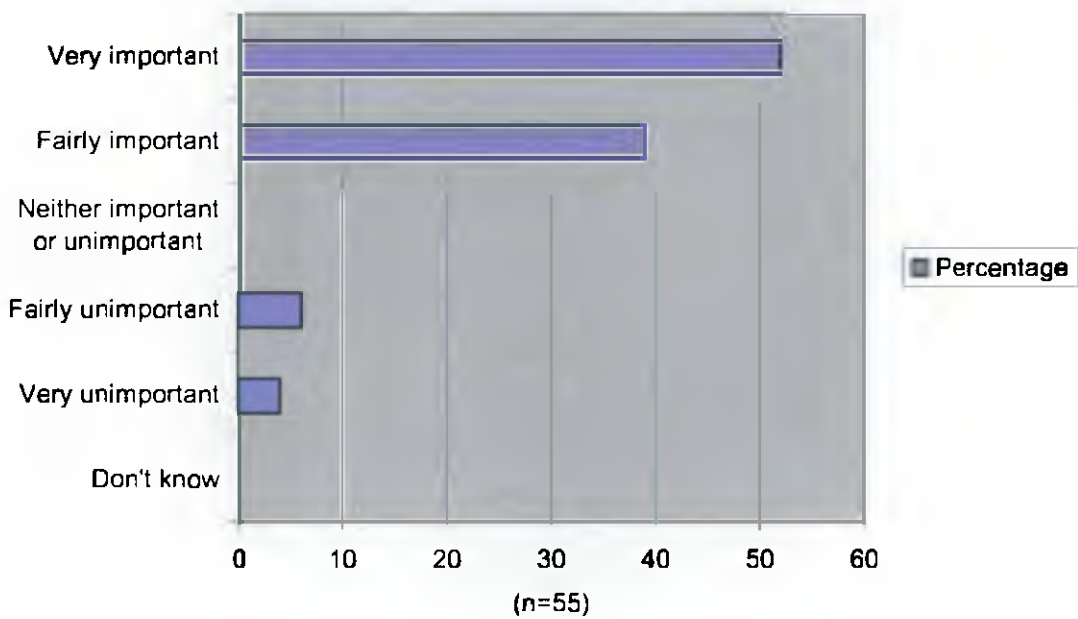
13c) "Veterinary nurse's can play a leading role in the audit process, providing they receive the appropriate support":

(n=55)

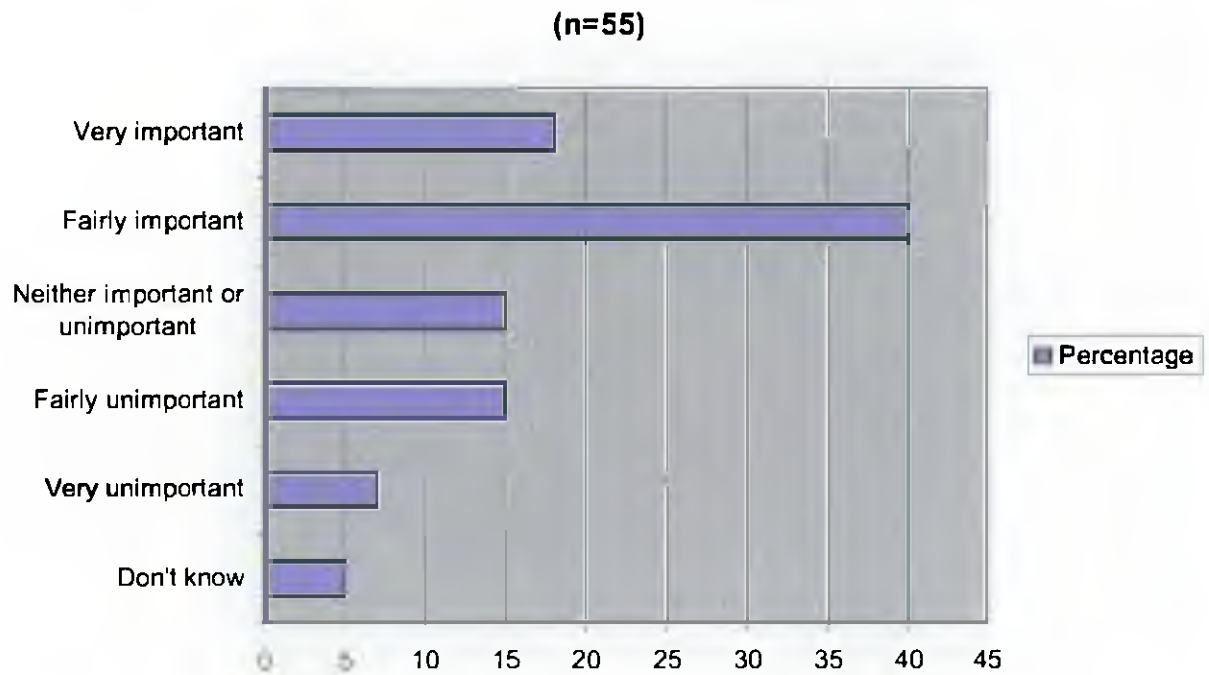


Q14 How important are each of the following benefits of clinical audit?

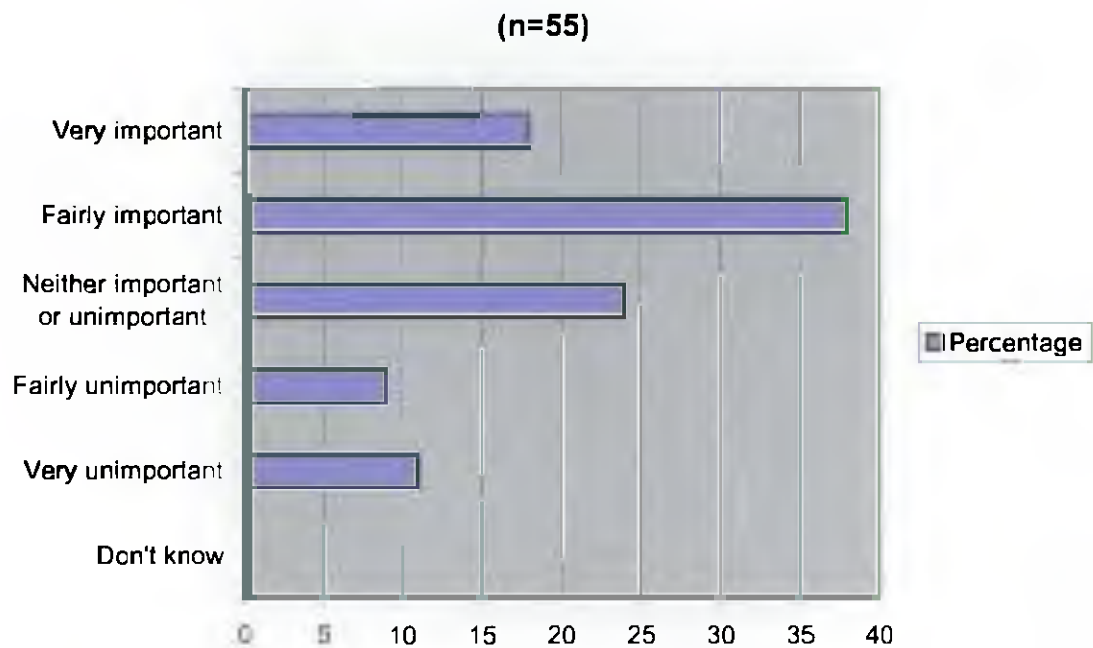
14a) As a tool to monitor and improve clinical performance:



14b) To conform with the RCVS practice standard guidelines for Tiers 2 & 3



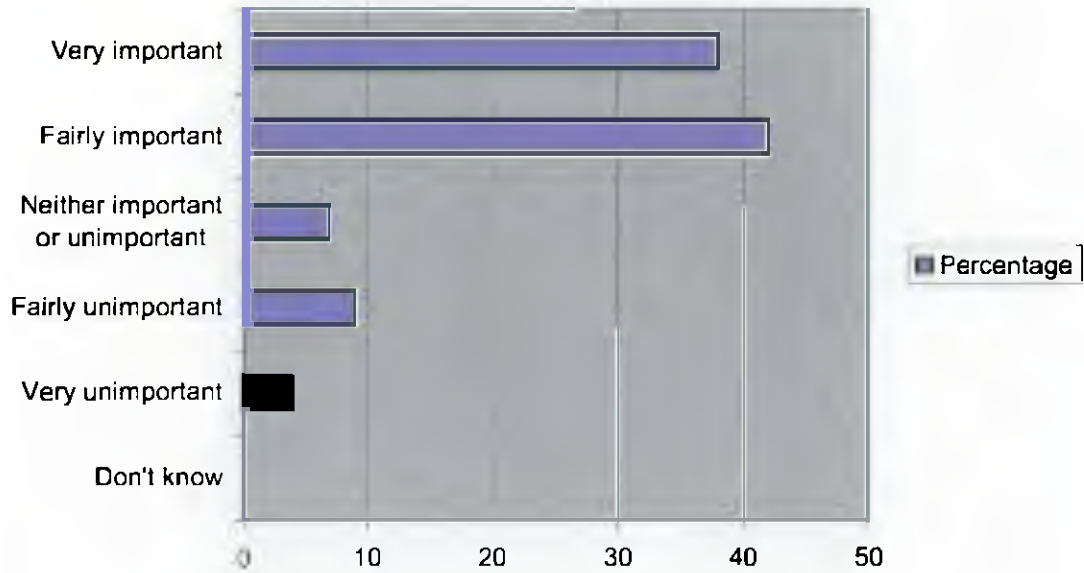
14c) To reassure the public





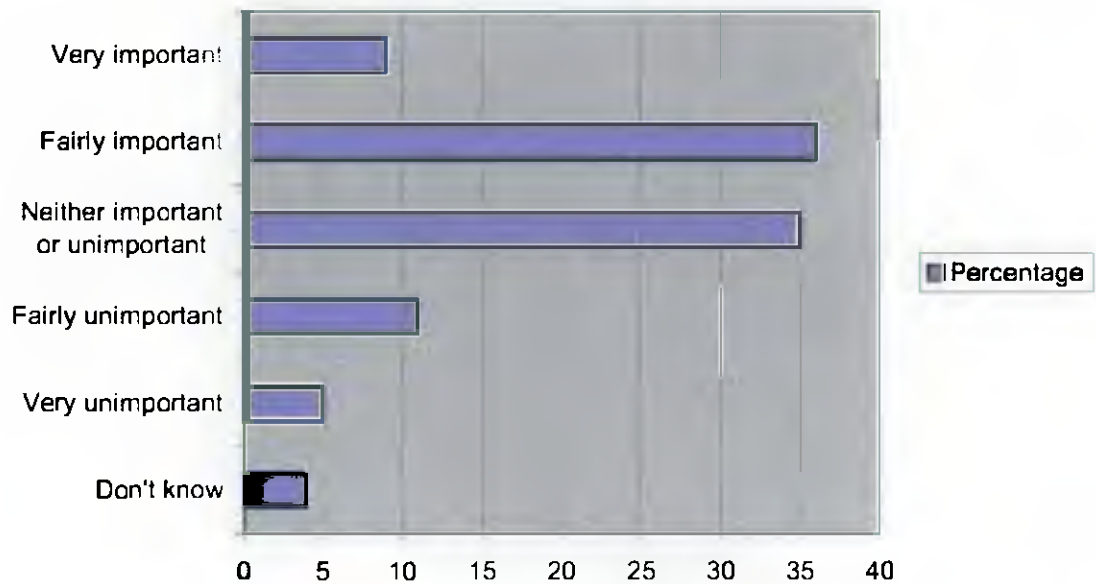
14d) To improve professional job satisfaction:

(n=55)



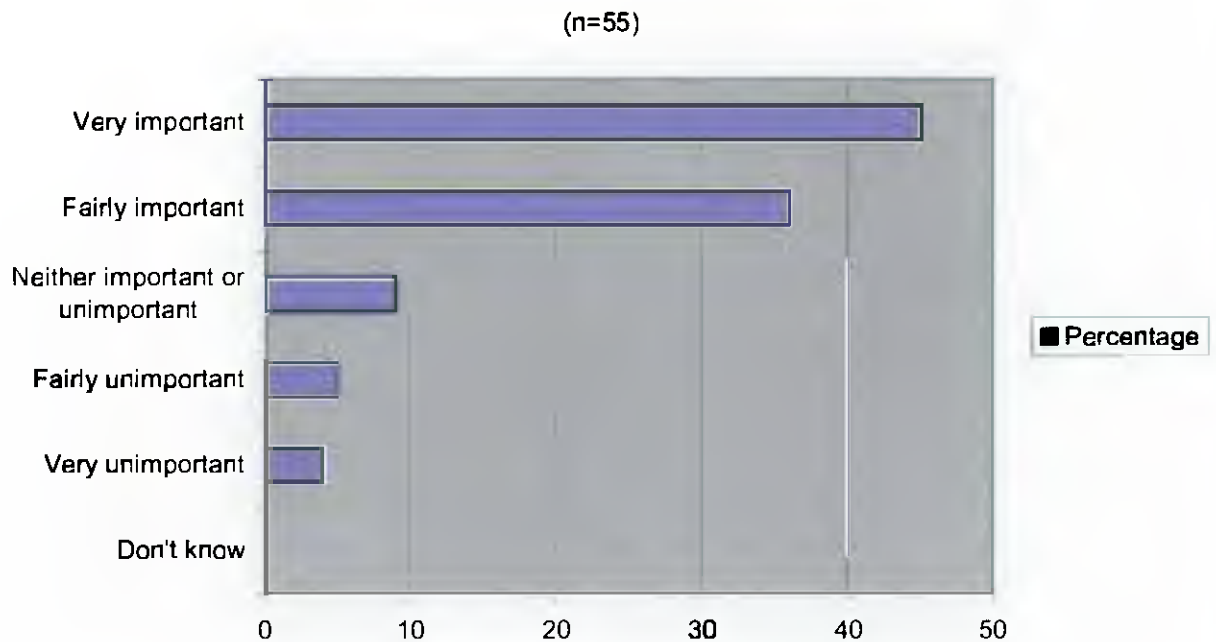
14e) As a management tool to increase practice income:

(n=55)





14f) To help standardise the care administered:



Other:

Team building (5)

To improve standards (2)

Contribute to knowledge outside the practice (2)

Discipline

Self esteem

Help decide on specific protocols

Benchmarking with other practices

General comments:

- How do you fit all the hassle of audit with the supposed aim of improving WLB
There just ain't time
- It provides an ongoing manifestation of commitment to what we take an oath about, and if mandatory will ensure that all vets and vns strive to keep up to date to MAINTAIN standards rather than allow an erosion through apathy and disinterest over time. If, as a byproduct, it IMPROVES standards then that is



a bonus, but it is my belief that any scheme should not set goals too high as to be unrealistic, and the maintenance of standards should be the aim - one that is absolutely measurable against an agreed professional standard for the whole profession

- Your own definitions of clinical audit would have been helpful at the start so we are all talking about the same thing. We include clinical parameters and service levels in our audits. Also looking at concordance if we can. Matching customer expectation is important as well as measuring against our own parameters. How do we decide action is needed if we don't have a benchmark?
- Good Luck with this
- To expand previous answer, we audited GA mortality, and established from this that our rabbit survival rate was not as good as we would have liked - but have found it difficult to adapt our procedures to improve the situation - so the audit highlighted something we already suspected, but we haven't really acted on the results. Also we would like to do one on post-operative complications esp infections, but feel that it may prove expensive to swab/culture every wound which isn't healing as well as it should, so we haven't done this audit yet... but know we should. Would be very helpful to know how other practices are doing audits, so we can use their templates in our own practice - helping avoid pitfalls such as those asked about in this questionnaire.
- I don't necessarily agree with standardising care but we can see if a system is better or not - if so difference then whichever system suits an individual should be used - I'm not sure if this is a function of auditing !
- We try to incorporate simple audit in our [fairly]regular vet meetings but we have not set up more formal audit yet. I think the RCVS scheme will hopefully encourage people to start auditing and thus improve standards of care
- The course was a revelation and we have sent three MsRCVs to them and Head Nurse and have benefited greatly. Introduction to PubMed etc very useful.

5 – project findings

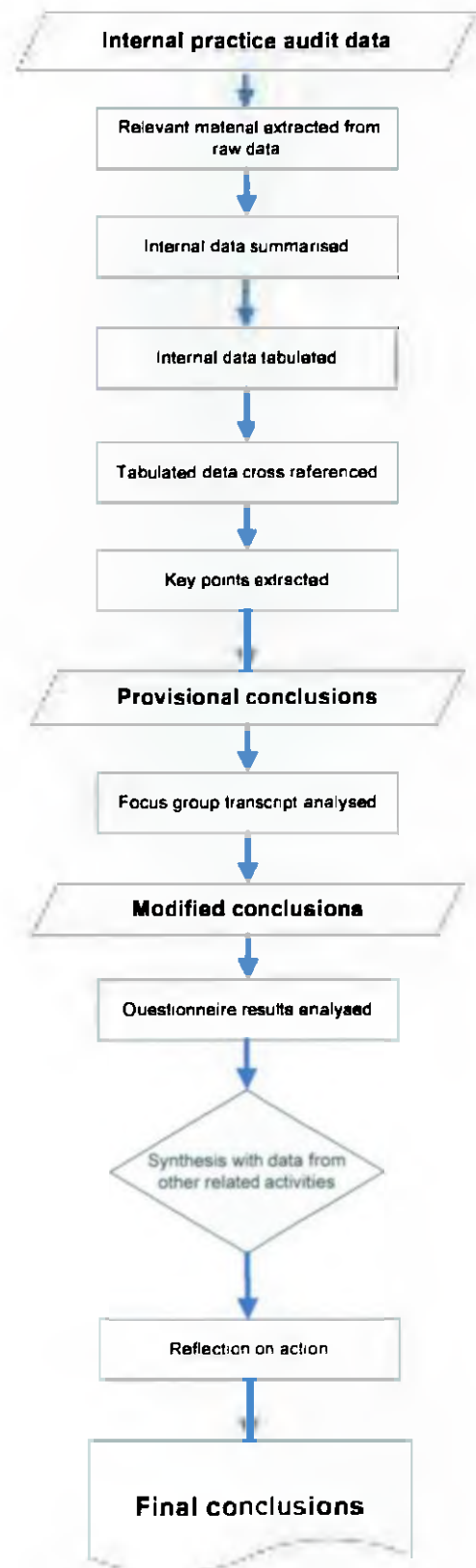
This chapter summarises and analyses the findings described in the last chapter for each of the three areas of research. During the research process, the practice audit results were analysed first and some provisional findings summarised. These were then tested at the focus group, and modified as appropriate. Finally, the findings that could reasonably be tested by means of a questionnaire were compiled into a suitable format, and triangulated by means of this third research methodology, providing a series of overall findings from the project activity which are summarised at the end of this chapter.

In the following chapter (Conclusions), the project activity results will then be compared and synthesised with other information that has been accumulated during the research process and their significance highlighted.

5.1 Practice audits

The diagram to the right highlights in red the next stage of the data analysis process.

The tabular summaries for each audit have been collated under their respective headings to allow easy comparison. The blue reference numbers refer to issues that have been extracted into the next stage of the data analysis.



Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Choice of topic	The area for audit was important – an improvement in performance would result in a clear benefit to the patient. However, the results suggested that there was insufficient room for improvement in order to make it worthwhile carrying on the audit. 1.1	The area for audit was common, 1.2 and one which classically challenges many clinicians – many cases respond quickly to treatment but a “hard core” keep coming back and back.	The area for audit was important – an improvement in performance would result in a significant decrease in morbidity in the patients concerned 1.3	The area for audit was a valid one, but new cases of the condition do not occur commonly enough 1.4	An excellent area to audit, as obesity control is both a common and an important area of clinical practice, where owner concordance is a major obstacle to performance	This is a critical area for audit, and one that any practice involved in the process should carry out. Other areas of surgical outcome could be audited, depending upon the nature of the practice. This is primarily an outcome audit, but also developed into a process audit.

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Choice of criteria	Very clear and easy to measure process audit 2.1	Complex, and potentially confusing. The audit initially started out as a process audit, but ended up primarily measuring outcomes.	A very clear and easy to measure process audit	Far too complex 2.1	Clear criteria for both the process (referred clients that attend) and outcome (weight loss achieved) 2.2	This needed very careful planning, particularly since the data was to be shared with other centres. The grading system was a real breakthrough in this area. 2.3

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Evidence base	Good base of evidence for process	It was essential for the lead clinician to present sound evidence to the clinical team in order to gain their co-operation with the proposed guidelines 3.1	Good base of evidence for process	Good base of evidence for the guidelines, although some debate about the proven value of ACE inhibitors 3.2	Good base of evidence for the benefits of obesity control	There is very little evidence of what an acceptable standard of POC actually is, and what factors influence it, and current protocols are generally based upon what is perceived as "best practice". This is why a process audit is needed to investigate local factors that might be contributing to the rate of POC.3.3

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-op. complications
Standards used	Close to 100% compliance reasonable	Performance was compared to a baseline measured retrospectively, and then monitored on a quarterly basis. 4.1	For the purpose of this audit, absolute numbers were used, looking for an increase from the baseline level measured retrospectively. Owner compliance was good but compliance from the patients was an issue, particularly since hyperthyroid cats are notoriously difficult to handle due to their condition, and BP can only be measured if the patient co-operates 4.2	100% compliance was aimed for once owners had agreed in principle to follow the guidelines. The standard would have had to be set much lower if all nephritic cats had been included automatically. 4.3	75% concordance for attendance and 90% for weight loss are both very high targets, but failure to meet them does not mean that the practice is under-performing. They probably need to be modified in the light of experience. 4.4	No standards currently exist, and will vary depending upon the criteria used. A major outcome from the collaborative project with the MSc group and others will hopefully be to standardise criteria and compare outcomes, to allow benchmarking. 4.5

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Use of IT	Coding simple and effective but depended upon compliance by the clinician 5.1	Coding simple and effective but depended upon compliance by the clinician. The use of macros on the PMS to provide the clinician with details of the guidelines for each of the three consultations was very effective.	The audit leader carried out quite sophisticated data mining to extract retrospective data using key words, and to double-check the validity of the audit data 5.2	Coding simple and effective 5.1	PMS used to track clients, generate reminders, and monitor weight loss. 5.3	The details of surgical protocols used are entered onto each record, which can easily be traced via the invoicing function of the PMS. Sharing of data involves the use of Excel templates set up by the MSc group to allow further analysis and comparison. 5.4

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
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Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Data validity	Errors on coding picked up with data search 6.1	No data mining was used to check on cases that had not been coded properly.	As the blood pressure recording is a chargeable item, it was easy to recall data, although when patients were non-compliant, nurses needed to remember to enter it as a zero charge 6.2	Errors on coding picked up with data search 6.1	Depended upon compliance by the clinician to enter "weight clinic" onto the record when making a referral	Although clinicians need to enter "POC" onto the reason for the re-examination for it to be automatically retrieved, data checking by calling up all canine neutering operations was simple and reliable. Some limited statistical analysis of the data with comparative groups was shown to be possible.

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Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Teamwork	All clinicians worked well together to improve compliance	All clinicians accepted the guidelines with enthusiasm, and seemed to appreciate the benefits that following them would bring but the initial high level of compliance waned significantly through the course of the audit. The audit required quite a high degree of co-operation from the other clinicians. 7.1	This project required excellent co-operation of both the veterinary and the nursing team, which was achieved admirably	There were not enough cases to really test how the team functioned	This audit involved the whole of the practice team, including veterinarians, nurses and front desk staff. The outcomes were excellent for practice morale 7.2	This involved a high degree of trust and co-operation between the nursing and veterinary teams. 7.2

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Resources	Only required a small amount of time for data retrieval and analysis	Required a significant amount of time to set up the guidelines and supporting documentation, and for data analysis 8.1	Required a moderate amount of time for data retrieval and analysis. We already possessed the blood pressure monitoring equipment. Significant nursing time was required for the monitoring process, but the cost of this was incorporated into the charge made to the owner 8.2	Required a moderate amount of time for data retrieval and analysis. The cost of the tests was covered within the charge to the client 8.2	Required a considerable amount of time for data retrieval and analysis, as well as nurse time for the clinics, which were not charged.	Significant time required for data retrieval and analysis

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Communications	Effective literature produced for clients. Guidelines communicated well to clinical team 9.1	Effective literature produced for clients. Guidelines communicated well to clinical team 9.1	Guidelines communicated well to the clinical team, including changes put into place after the second period was reviewed. 9.3 Owner concordance was found to be straightforward once the recommendation was made by the clinician 9.4	Effective literature produced for clients. Guidelines were too complex to be easily understood and followed by the clinical team 9.2	Effective literature produced for clients. Guidelines communicated well to all of the practice staff 9.1	Guidelines communicated well to clinical team.

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-operative complications
Cost benefit	<i>Clear benefit to owner and the effective treatment of their pet by encouraging the routine use of this diagnostic procedure. The cost of this procedure is around £200 plus VAT, so if all of the 21 cases seen over the previous year had been radiographed, instead of the 16 that were, approximately an extra £1,000 of extra practice income would have been generated.10.1</i>	Treating pruritic skins more effectively has to be good for client retention, and having clear guidelines to deal with such cases reduces mixed messages in a multi-vet practice. 10.2	Clear benefit to owner and to practice by encouraging the routine use of this diagnostic procedure, providing that extra nursing staff do not need to be employed to carry out these procedures 10.1	In the small number of cases that did comply with the guidelines, there was a very clear cost benefit to the practice in terms of extra revenue generated from the laboratory tests, and drug and diet sales 10.1	Some cost benefit from client sales and perhaps more significantly yet less quantifiably from improved client bonding 10.3	The cost of the audit procedure needs to be seen as an integral part of quality assurance for surgery. Where practices are competing with low cost neutering clinics, it may be a way in which they can demonstrate that their guidelines and performance are sound. 10.4

Area of analysis	Congestive Heart Failure	Pruritus in dogs	Hypertension in cats	Nephritis in cats	Management of obesity	Post-op. complications
Key points	<p>Need to select area for audit where there is expected to be room for improvement</p> <p>If performance is deemed to be satisfactory, periodic re-monitoring is still advisable 11.1</p> <p>Clear criteria and simple audits can be very effective</p> <p>Basic computer coding is effective but needs to be double-checked by data mining where possible</p>	<p>Clinical freedom could be threatened by detailed clinical guidelines – need for team agreement and room for clinical discretion to suit individual cases. 11.2</p> <p>Criteria need to be very clearly spelled out from the outset.</p> <p>Excellent use of IT including guidelines displayed on the PMS</p> <p>A good example of an outcome audit that could in the long term generate useful research data. 11.3</p>	<p>Potential conflict between practice-based research and audit 11.4</p> <p>Clinical audit can help to draw attention to important research questions, and could contribute first opinion data to research projects 11.3</p> <p>A very significant improvement in performance and cost benefit was demonstrated</p> <p>Close co-operation between veterinarians and nurses required</p> <p>Audit can be an effective means of promoting new technology 11.5</p>	<p>Need to audit conditions that occur commonly. A retrospective audit of the data may help to clarify this</p> <p>It is vital to keep the audit design, and specifically the criteria, simple</p> <p>The evidence base for treatments whose benefits are taken for granted sometimes do not stand up to close scrutiny</p>	<p>Veterinary nurses can play an active and highly constructive role in the audit process 11.6</p> <p>The importance of reviewing progress and modifying guidelines accordingly was clearly demonstrated 11.7</p> <p>This is an area where cost benefits in terms of diet sales and long term benefits from improved client bonding can be encouraged by the audit process</p>	<p>A key area of audit that every practice should consider carrying out 11.8</p> <p>Careful thought about the criteria used is necessary to reduce bias and to enable the meaningful comparison of data</p> <p>Outcome audits enable the comparison of data and monitoring of performance, but they may well generate a need for further process audits.</p>

5.2 Summary of points from practice audit results

Choice of topic

- Needs to have room for improvement
- Should occur commonly (& 1.4)
- Should have significant impact on the patient

Choice of criteria

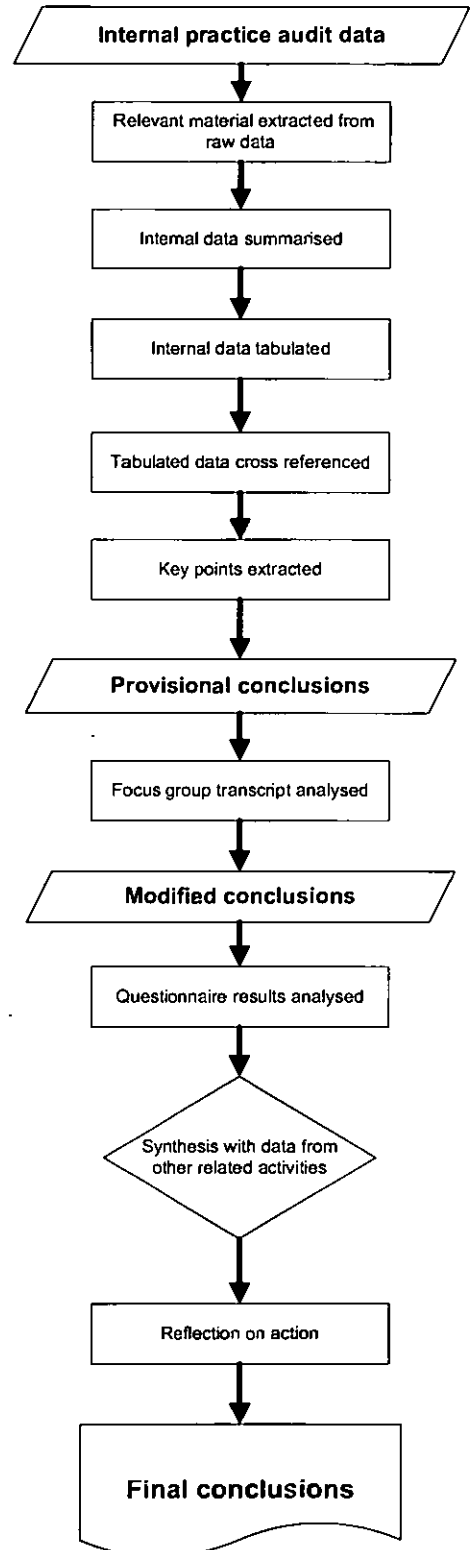
- Must be clear and easy to measure
- Can combine both process and outcome audits successfully
- Shared data best with outcome audits and needs careful planning

Evidence base

- A good evidence base will help to motivate the clinical team
- The evidence for some mainstream therapies sometimes does not stand up to close scrutiny
- There is almost no veterinary evidence for acceptable standards of outcome

Standards used

- May initially be established by a retrospective audit locally
- Often less than 100% due to factors outside the control of the clinician
- Depend upon the inclusion criteria that have been defined
- Will often need to be modified in the light of experience
- Sharing of data will allow benchmarking between practices



Use of Information Technology

- Coding for the recall of data can be simply effected on an existing PMS
- Retrospective audits may be less reliable due to problems with data retrieval
- Computers can play a vital role in the overall audit process
- Manual grading of outcomes can allow computerised sharing of information even without shared coding of systems

Data validity

- Data mining can be used to check the validity of coding entered by clinicians
- When invoicing is used as a method of data recall, zero charges sometimes have to be entered

Teamwork

- Audit encourages clinicians to work together as a team, providing it is approached correctly
- Audit often demands a high degree of co-operation between the veterinary and nursing teams
- Great care must be taken to avoid a fall-off in concordance with guidelines as enthusiasm wanes: regular feedback and reinforcement will help to achieve this.

Resources

- Audits often require a significant amount of time to set up and run
- Process audits may generate income by promoting best practice

Communications

- Simple guidelines need to be effectively communicated to staff and clients
- Complex guidelines are doomed to failure
- Changes to guidelines at review need to be passed on clearly
- The recommendation of the clinician was vital to concordance

Cost benefit

- Some audits produce a clear cost benefit in terms of extra services supplied
- Standardising treatment reduces confused messages to clients and may help retention, especially in large practices

- Indirect cost benefits may occur from improved client bonding
- In some areas the cost needs to be borne as part of the overall quality assurance policy

Additional key points not previously listed:

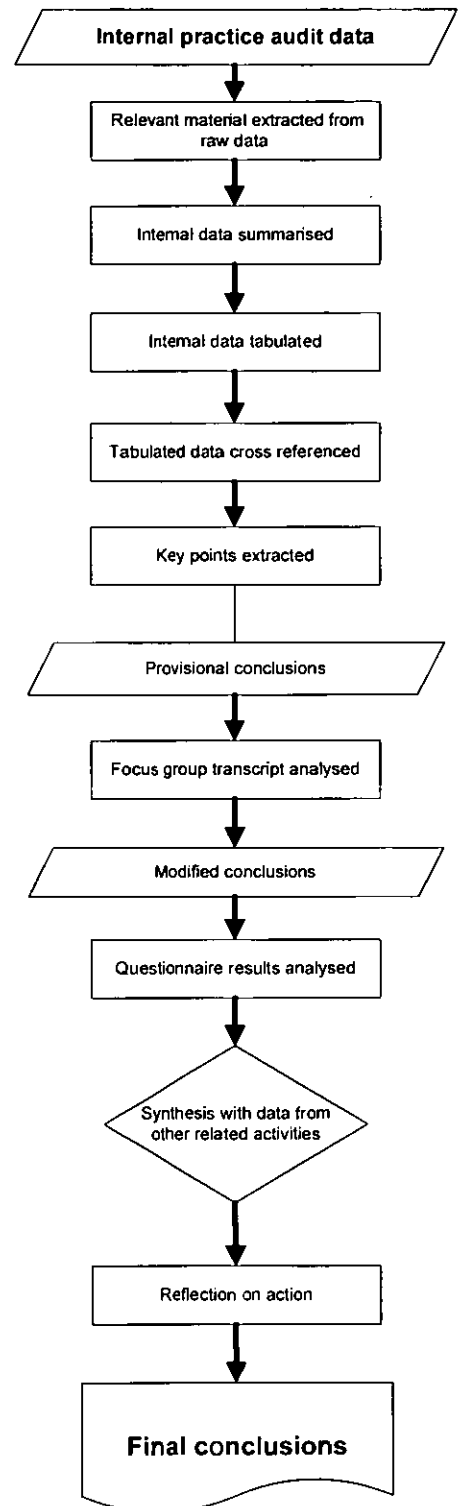
- If performance is deemed to be satisfactory, periodic re-monitoring is still advisable
- Clinical freedom could be threatened by detailed clinical guidelines – need for team agreement and room for clinical discretion to suit individual cases
- Audits can sometimes both identify the need, and help to generate, research data
- Audit needs to be clearly differentiated from practice-based research
- Audit can be an effective means of promoting new technology
- Veterinary nurses can play an active and highly constructive role in the audit process
- It is vital to review progress and modify guidelines accordingly
- POC's are a key area of audit that every practice should aim to carry out
- Attention must be paid to avoiding over-enthusiastic interpretation of the data

5.3 Focus group analysis

The provisional conclusions of the internal audit research were taken to the focus group to be tested. The next stage in the data processing is to analyse the findings of the focus group, which were reported in the section 4.10.1.

The full transcript of the focus group discussion can be found in Appendix Four.

The items below highlighted in bold are the original questions put to the focus group, and in blue I have added the points arising from the focus group discussion:



The areas of clinical veterinary practice that are most suited to being audited are:

- Commonly encountered
- Amenable to measurement
- Have room for improvement in performance

POINT 1 – it may be important to audit some issues not because they are common, or because you may know there is a need to improve them, but because they are important, even if things go wrong in isolated cases. This may be more of a critical incident review than a true audit.

Auditing outcomes vs processes:

POINT 2 – It is only likely to be feasible to compare outcomes meaningfully between independent centres, not processes, which will invariably differ. Therefore, practices can compare outcomes to generate and compare standards, and then need to carry out internal process audits if they identify a potential problem

Although there is no commonly agreed coding system, the recall of relevant data using current PMS's is relatively easily achieved, although there is inevitably a need for some manual processing of the data produced.

POINT 3 - The major problem was with the inputting of data. There was a need to raise awareness among vets to realise the importance of data extraction when dealing with their software suppliers, and of the need to train staff in the process of orderly data entry. Overall, extracting the data from current systems was achievable but not easy.

Common pitfalls:

- Trying to carry out in-practice research rather than audit
- Trying to achieve too much thus making an audit over-complicated
- Picking an area of audit that does not occur commonly enough
- Poor communications within the practice and with clients
- Not allowing enough "protected time" to carry out the process

POINT 4 – it was suggested that "Changing parameters part way through" should be added to this list

Veterinary and support staff are generally positive to the audit process, providing they are involved in its instigation and feel some degree of ownership of the project.

POINT 5 - There was unanimous agreement to this concept, providing that the whole clinical team are actively involved in the audit process.

VN's can play a leading role in the audit process

POINT 6 - No dissention to this contention with the proviso that the whole clinical team have to be onside in the first place.

The benefits of clinical audit are:

- As a management tool to monitor and improve performance
- To conform with the RCVS practice standard guidelines for T2 & T3
- To reassure the public
- To improve professional job satisfaction
- To generate increased practice income by motivating staff and improving owner compliance

POINT 7 - It was suggested that the first point be amended to " As a tool to monitor and improve clinical performance".

Can audit act as a marker for the overall performance of a practice, even in areas that it does not actually audit?

POINT 8 - there was a general feeling that at the current time auditing can act as a very general marker of quality, and may be used to justify the cost of a higher standard of care to the general public.

POINT 9 - Another benefit of auditing now is that if we don't do it ourselves, it may be forced upon us externally

POINT 10 - The term concordance was strongly preferred over compliance. Compliance implies enforcement of what the practice says whereas concordance involves agreement on a joint decision using audit and clinical evidence to reach that point

The lessons we have learnt as a group from trying to set and compare standards were —

POINT 11 – There is a complete lack of EBVM to set benchmarks

POINT 12 – It is important to keep audits as simple as possible

POINT 13 – It is important to define what the term “standard” means

POINT 14 – The difference between protocols and guidelines needs to be defined. The latter may be preferable in many practice circumstances as it implies assistance rather than compulsion

POINT 15 - It was noted that submitting figures to compare performance did not mean that the practice was carrying out the audit cycle.

Clinical audit is a practicable and effective means of maintaining a high standard of veterinary general practice.

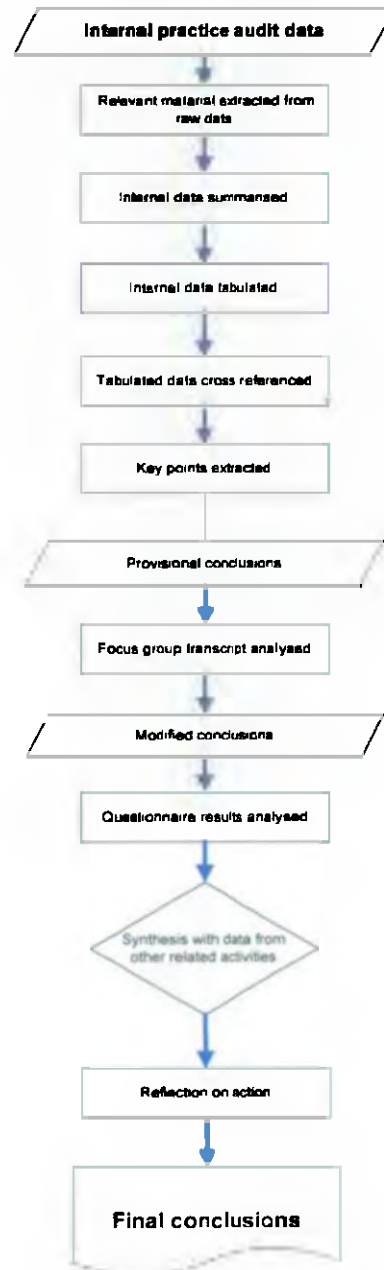
POINT 16 - “Clinical audit is a practicable and effective tool to help raise and maintain the standard of veterinary general practice”.

POINT 17 - there is a marked difference between audit and scientific IPR



5.4 Revision of provisional conclusions in light of the focus group results

As a result of the focus group activity, I revisited the provisional conclusions drawn from my internal action research project, and modified them accordingly (the modifications are in red, and the blue numbers in the text below refer to the focus group point numbers from above):



The areas of clinical veterinary practice that are most suited to being audited are:

- Amenable to measurement
- Commonly encountered
- Have room for improvement in performance

Alternatively to 2 & 3 above, the subject may be uncommon, but of particular importance due to the critical nature of the criteria being measured e.g. anaesthetic death (1)

Process audits will often progress naturally from an outcome audit, as an outcome audit may be used to initially establish standards of performance, either internally or externally. If a problem is identified, a process audit will enable the practice to change ways in which the outcomes are being achieved. When comparing standards between practices, it is generally only feasible to compare outcomes, and not processes, as have completely different ways of doing the same task, and in most instances there would be little hope of unifying them. Therefore, practices can compare outcomes to generate and compare standards, and then need to carry out internal process audits if they identify a potential problem. (2)

There is a significant variability in the ease in which different practices are able to retrieve audit data from their PMS's. The most important consideration is the manner in which the clinical data is originally entered. There is a need to raise awareness among vets to realise the importance of data extraction when dealing with their software suppliers, and of the need to train staff in the process of orderly data entry. Overall, extracting the data from current systems was achievable but not easy. (3)

Common pitfalls:

- Trying to carry out in-practice **scientific** research rather than audit
- Trying to achieve too much thus making an audit over-complicated
- Picking an area of audit that does not occur commonly enough, unless it has been identified as being of particular importance to monitor
- Poor communications within the practice and with clients **to encourage the optimum concordance from both parties.**
- **Not allowing enough "protected time" to carry out the process**



- Trying to change the parameters of the audit part way through (4)

Veterinary and support staff are generally positive to the audit process, providing the whole clinical team are actively involved in the audit process and feel some degree of ownership of the project. (5)

VN's can play a leading role in the audit process, providing they receive the appropriate support from management and other members of the clinical team. (6)

- The benefits of introducing clinical audit are:
 - As a tool to monitor and improve clinical performance (7)
 - To conform with the RCVS practice standard guidelines for Tiers 2 & 3
 - To reassure the public
 - To improve professional job satisfaction
 - To generate increased practice income by motivating staff and improving owner concordance (10)
 - To avoid having it imposed externally (9)

Auditing can act as a very general marker of quality, and may be used to justify the cost of a higher standard of care to the general public. (8)

The lessons we have learnt as a group from trying to set and compare standards were:

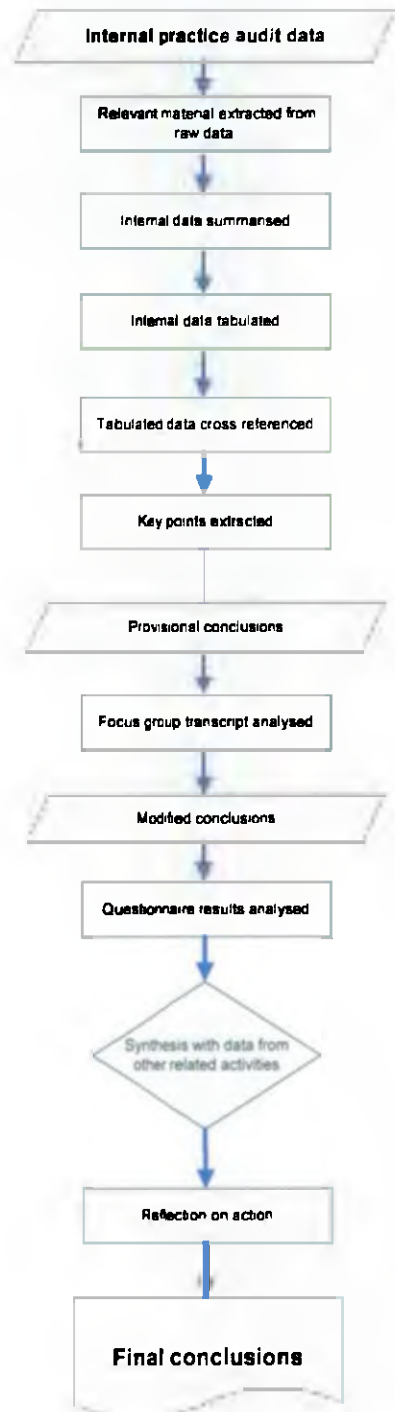
- the complete lack of EBVM to set benchmarks (11)
- the importance of keeping audits as simple as possible (12)
- the need to clearly define what that the term "standard" actually means (13)
- defining the difference between protocols and guidelines (14)
- the sharing of performance figures to help generate an external comparison does not, in itself, constitute a full audit cycle (15)
- generating categories of outcome criteria that can be used to compare data between different practices (2)

Clinical audit is a practicable and effective tool to help raise and maintain the standard of veterinary general practice. (16)

5.5 Questionnaire analysis

These conclusions were taken forwards in the form of a questionnaire for further triangulation, and the provisional above further modified in the light of the responses.

The changes are again in red, and the questionnaire question that the change relates to, and my comments, are in blue italic. Where I state “% agree” figures, they relate to a summation of the “agree” and “agree strongly”, or the “fairly important” and “important” answers:



The areas of clinical veterinary practice that are most suited to being audited are:

- Amenable to measurement (*11a concurs strongly-76%*)
- Commonly encountered (*11b concurs 65%*)
- Have room for improvement in performance (*11c concurs more weakly - 54%*)
- Financially significant to the practice and/or the owner

Alternatively to 2 & 3 above, the subject may be uncommon, but of particular importance due to the critical nature of the criteria being measured e.g. anaesthetic death (*11d concurs - 60%*)

Of the unsolicited responses, the addition to the list was cited by 5 respondents, and appears relevant. The issue of financial significance was debated at some length in the focus group session – is clinical audit a management tool or just a clinical one? Originally, my draft conclusions had listed as a benefit “To generate increased practice income by motivating staff and improving owner compliance”, but I decided to omit this in the light of a conversation with the focus group which suggested that we needed to be careful to ensure that clinical audit was not perceived as a money-making exercise by the public. However, since this aspect has been highlighted by the unprompted questionnaire answers, on reflection I feel that it is also important to sell it to the profession, and so this should be added back in (also later under “benefits of audit”).

Process audits will often progress naturally from an outcome audit, as an outcome audit may be used to initially establish standards of performance, either internally or externally. If a problem is identified, a process audit will enable the practice to change ways in which the outcomes are being achieved. When comparing standards between practices, it is generally only feasible to compare outcomes, and not processes, as have completely different ways of doing the same task, and in most instances there would be little hope of unifying them. Therefore, practices can compare outcomes to generate and compare standards, and then need to carry out internal process audits if they identify a potential problem.

There is a significant variability in the ease in which different practices are able to retrieve audit data from their PMS's. The most important consideration is the



manner in which the clinical data is originally entered. There is a need to raise awareness among vets to realise the importance of data extraction when dealing with their software suppliers, and of the need to train staff in the process of orderly data entry. Overall, extracting the data from current systems was achievable but not easy. *(Q10 concurs, with most responses in the mid-range but some skew towards "easily")*

Common pitfalls:

- Trying to carry out in-practice scientific research rather than audit *(Q12a concurs, with 62% agreement)*
- Trying to achieve too much thus making an audit over-complicated *(Q12b very strongly concurs with 92% agreement)*
- Picking an area of audit that does not occur commonly enough, unless it has been identified as being of particular importance to monitor *(12c concurs less strongly, with 58% agreement)*
- Poor communications within the practice *(12d - 82% agreement)* and with clients to encourage the optimum concordance from both parties *(12e only 40% agreement - 47% neutral)*
- Not allowing enough "protected time" to carry out the process *(12f concurs strongly with 74% agreement)*
- Trying to change the parameters of the audit part way through *(12g concurs weakly with 55% agreement and 33% neutral)*
- **Insufficient planning at the outset**
- **Not communicating or acting upon the results**

Reflecting upon the results of this section, there is generally strong agreement with the pitfall I had outlined. It was weakest for "poor communications with clients" and "Trying to change the parameters part way through", but still on balance agreeing rather than disagreeing, so they have been left in.

"Keeping it simple" and "allowing enough protected time" both gained particularly high agreement scores, highlighting their relevance.



From the list of “others”, “insufficient planning at the outset” and “not communicating or acting on the results” are in agreement with the experiences I have encountered, and have been added to the list.

Veterinary and support staff are generally positive to the audit process, providing the whole clinical team are actively involved in the audit process and feel some degree of ownership of the project. *(Q13b concurs strongly with 76% agreement)*

VN's can play a leading role in the audit process, providing they receive the appropriate support from management and other members of the clinical team. *(Q13c concurs very strongly with 87% agreement)*

The benefits of introducing clinical audit are:

- As a tool to monitor and improve clinical performance *(Q14a very strongly concurs, with 91% rating it as important)*
- To conform with the RCVS practice standard guidelines for Tiers 2 & 3 *(Q14b concurs with 58% rating as important)*
- To reassure the public *(Q14c concurs with 56% agreement as important)*
- To improve professional job satisfaction *(Q14d strongly concurs with 80% agreement it is important)*
- As a management tool to increase practice income *(Q14e mildly agrees, with 47% rating it as important and a further 35% neutral)*
- To help standardise the care administered *(Q14f strongly agreed with 81% rating it as important)*
- To avoid having it imposed externally
- To assist with team building within the practice *(this was added as an “other” by 5 people in some form, and agrees strongly with my practice audit experience)*

Auditing can act as a very general marker of quality, and may be used to justify the cost of a higher standard of care to the general public.

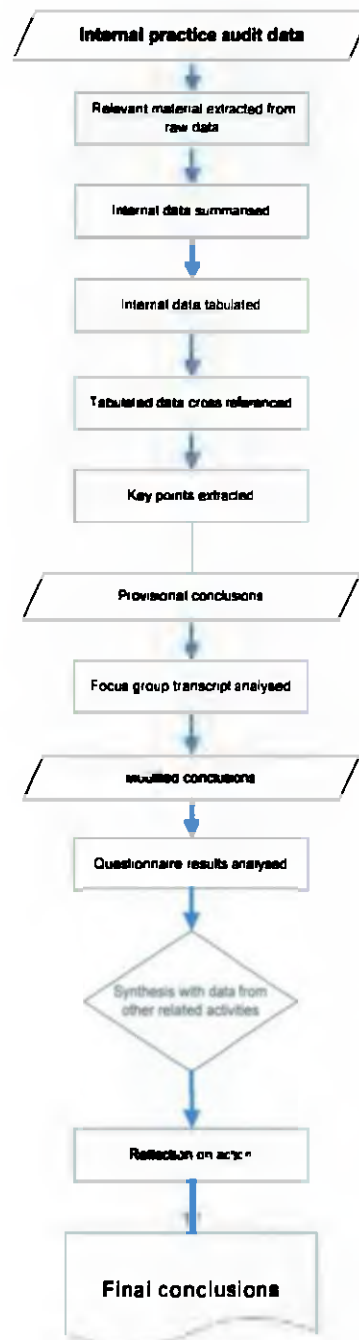
The lessons we have learnt as a group from trying to set and compare standards were:

- the complete lack of EBVM to set benchmarks (*Q13a did not convincingly agree with this assertion, with a broadly neutral response, although it relates to establishing guidelines rather than benchmarks*)
- the importance of keeping audits as simple as possible (*Q12b very strongly concurs with 92% agreement*)
- the need to clearly define what that the term “standard” actually means
- defining the difference between protocols and guidelines
- the sharing of performance figures to help generate an external comparison does not, in itself, constitute a full audit cycle
- generating categories of outcome criteria that can be used to compare data between different practices

Clinical audit is a practicable and effective tool to help raise and maintain the standard of veterinary general practice.

5.6 Major research findings

The following is the final synthesis of the research findings, as produced initially from my practice-based action research project, then tested and modified as a result of the MSc clinical audit focus group, and finally triangulated and modified as appropriate as a result of the questionnaire of a broader population of veterinary surgeons that have had some experience of the audit process. This has primarily been based upon the activities outlined in Chapter 4, but has also included a synthesis of information from other areas of my activity, as described in Chapter 6.



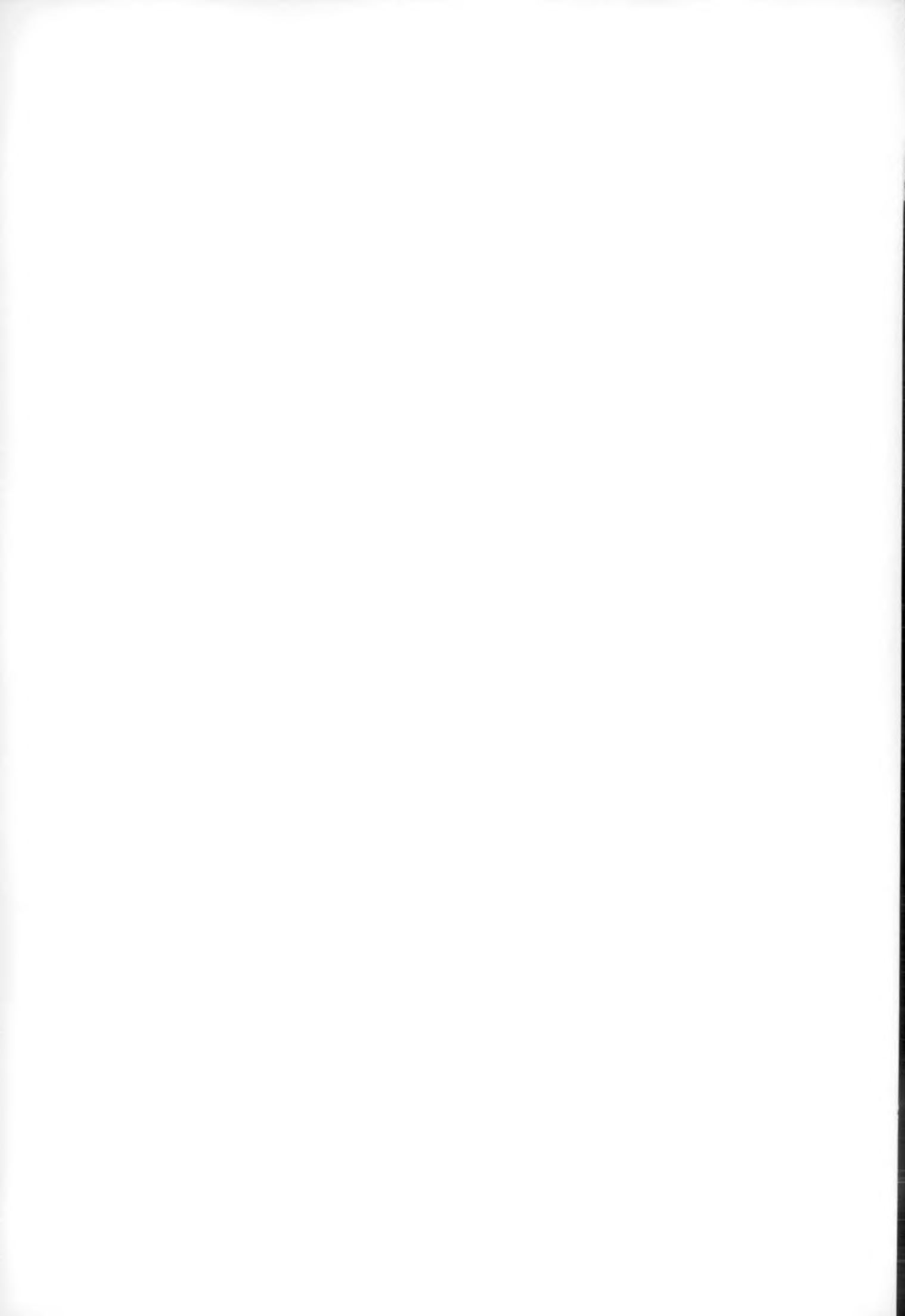
5.6.1 Definition of terms

The deliberations of the MSc group have highlighted certain areas of definition, that although semantic, are important to clarify, as different terminologies can have subtly different meaning, and some are used differently in an audit context to their more common usage:

Clinical audit/ The clinical audit cycle Discussion with the clinical audit MSc group subsequent to the focus group meeting have brought up the issue of whether simply measuring a level of clinical performance constitutes clinical audit or not. This may seem esoteric, but it has practical implications: for example, would someone participating in the scheme to measure and share information on post-operative complications be fulfilling the RCVS requirements to carry out clinical audit? It seems that within the strict definition of the term, they would, because the audit process primarily involves measuring. But they would not be carrying out a clinical audit cycle, which most importantly, includes the process of reflecting upon the results and instituting changes that are aimed to bring about an improvement in performance. I have used this observation to modify my definition of clinical audit (see Chapter 7.1).

Protocols/ guidelines. Protocols are procedures that have been agreed and laid down to dictate the way in which a particular problem is approached. The term implies a certain degree of compunction, and in some circumstances that may be appropriate, so that they must be followed, and can only be changed by referring them back to the body that formulated them. In many instances, the use of the term guideline is preferable, as it inherently recognises that it is there to assist the clinical decision making process, but takes into account that clinical judgment may be used to deviate away from the recommended pathway when individual circumstances dictate.

Criteria. These have been defined as "explicit statements that define what is being measured, and represent elements of care that can be measured objectively" (NICE,



2002), and are crucial to the design of an audit. Confusion can arise when they are used to describe other aspects of the audit, such as "inclusion criteria", so care needs to be taken with its use.

Compliance/ concordance. Rather like with the use of protocols/ guidelines, the term compliance implies that the owner of the animal is required to comply with what they are told to do by the clinician, and in some circumstances, where following directions to the letter is crucial, the use of the term is correct. Concordance is a softer term, that describes the formulation of an agreed action plan that is then taken forwards by both parties as partners in achieving a shared goal.

Evidence Based/Informed Veterinary Medicine (EBVM/ EIVM). A similar issue arises with the use of the term EBVM, which implies that a sound evidence base exists for everything that we do, and that it should slavishly be applied to all clinical work. The concept has even been taken forwards by health care administrators to promote the argument that the medical profession should restrict their activities to the diagnosis and treatment of disease, and that health care managers are better placed to make strategic decisions about the type of treatment that is applied. EIVM recognises the concept that every patient is an individual, and that although we should use the best available evidence to inform what we do, there will always be a need for clinical decision making based on a knowledge of underlying principles and experience.

Standards. This is a particularly thorny term, because it can have a completely different meaning in common usage compared to its meaning within the audit context, which can be defined as "A statement which outlines an objective with guidance for its achievement given in the form of criteria sets which specify required resources, activities, and predicted outcomes. It decides the level of care to be achieved for any particular criterion" (NICE, 2002). In other words, it is a target. In common usage, its meaning is often quite different, as in: "Providing a certain standard of care," where it refers to the level of care that is being achieved, rather than that to which the organisation aspires. Within the audit context, the meaning is more closely akin to the term "Gold Standard". NICE recognises this issue in the human field, and recommends that the term is avoided where possible.

5.6.2 Area of audit

The areas of clinical veterinary practice that are most suited to being audited are:

- Amenable to measurement
- Commonly encountered
- Have room for improvement in performance
- Financially significant to the practice and/or the owner

Some conditions may be uncommon, but of particular importance due to the critical nature of the criteria being measured e.g. anaesthetic death. Audit of such areas is problematic, due to the small numbers involved and thus the difficulty of determining their significance. They will often be monitored, and a critical incident review carried out when an unexpected event occurs. This is not a true audit, in the sense of a full completion of the audit cycle.

5.6.3 Type of audit

Process audits will often progress naturally from an outcome audit, as an outcome audit may be used to initially establish standards of performance, either internally or externally. If a problem is identified, a process audit will enable the practice to change ways in which the outcomes are being achieved. When comparing standards between practices, it is generally only feasible to compare outcomes, and not processes, as they have completely different ways of doing the same task, and in most instances there would be little hope of unifying them. Therefore, practices can compare outcomes to generate and compare standards, and then need to carry out internal process audits if they identify a potential problem.

5.6.4 Retrieval of data

There is a significant variability in the ease in which different practices are able to retrieve audit data from their PMS's. The most important consideration is the manner in which the clinical data is originally entered. There is a need to raise awareness among vets to realise the importance of data extraction when dealing with their software suppliers, and of the need to train staff in the process of orderly data entry. Overall, extracting the data from current systems was achievable but not easy. In the long term, a commonly agreed system of coding, similar to that used in

the medical field, would assist the storage of properly coded data, and greatly facilitate the automated gathering and comparison of data between practices.

5.6.5 Common pitfalls

- Trying to carry out in-practice scientific research rather than audit
- Trying to achieve too much thus making an audit over-complicated
- Picking an area for audit that does not occur commonly
- Poor communications within the practice and with clients to encourage the optimum concordance from both parties
- Not allowing enough "protected time" to carry out the process
- Trying to change the parameters of the audit part way through
- Insufficient planning at the outset
- Not communicating or acting upon the results
- Interpreting the data over-enthusiastically

5.6.6 Teamwork

Veterinary and support staff are generally positive to the audit process, providing the whole clinical team are actively involved in the audit process and feel some degree of ownership of the project. If sufficient protected time is not allowed for those working on the audit team, some resentment may result.

It is natural that a fall-off in staff compliance with audit guidelines will tend to occur over time. It is important to be aware of this, and to try and counteract it by regularly feeding back to audit team members the results of their efforts, and reinforcing the need to maintain momentum.

VN's can play a leading role in the audit process, providing they receive the appropriate support from management and other members of the clinical team.

5.6.7 Benefits of introducing clinical audit

These are presented in order of importance as perceived by the questionnaire respondents:

- As a tool to monitor and improve clinical performance
- To improve professional job satisfaction
- To help standardise the care administered
- To assist with creating a no-blame culture within the clinical team
- To conform with the RCVS practice standard guidelines for Tiers 2 & 3
- To reassure the public
- As a management tool to increase practice income
- To avoid having it imposed externally

5.6.8 Benchmarking

The lack of a base of comparative data to help set benchmarks, mean that almost nothing currently exists within the veterinary scenario. Currently, practices wishing to measure changes in performance brought about by the audit process need to establish a baseline measurement of their own performance, either by studying retrospective data, or running the audit before new guidelines are put into place, and so establish internal targets.

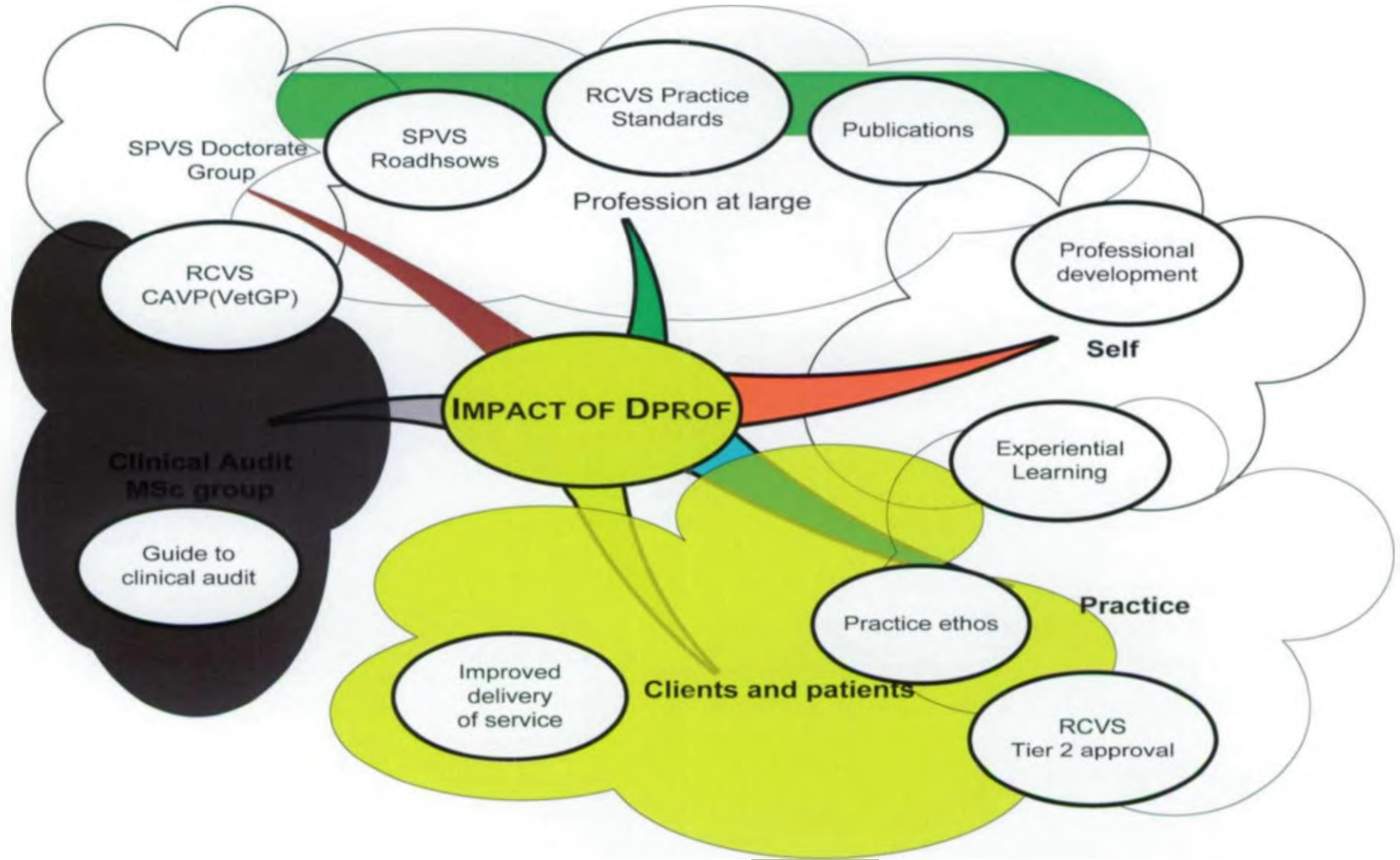
The clinical audit MSc group has started to create a template for entering data from audits than can then be shared and compared (anonymously). It should be recognised that partaking in this sharing of data alone does not constitute a full audit in itself, but will help to provide information on the performance of other practices, and thus establish benchmarks.

Chapter 6 `review of wider impact of DProf

The DProf Regulations issued by the University of Middlesex state that "*While of high value to candidates' immediate operational context, the impact of the project will be far-reaching for related professional and managerial colleagues*".

The aim of this chapter is to illustrate that the research projects outlined in the previous chapters have been carried out in the context of a wide range of other activities that I have carried out, relating to the development of a postgraduate qualification for practicing veterinary surgeons, and the development of clinical audit within the profession. Some of these have already been referred to in the context of my research project, but the diagram below, and the text that follows, is designed to summarise them, and place them within the context of my personal world, my workplace, and the profession at large:





Working in an anticlockwise direction from the bottom left hand corner of the chart:

6.1 Guide to Clinical Audit

In April 2004, I established a new MSc learning set in conjunction with the PDF and MU, using the work-based format that we had previously used to work towards our MSc(VetGP)'s as part of the first SPVS/PDF/MU Masters Group. Whereas in the first instance we were working towards establishing a postgraduate qualification geared to the needs of practicing veterinary surgeons, the members of this second set have each been researching different aspects of the audit process.

The six members of this learning set are highly experienced veterinarians, with four working in small animal practice, one in equine practice, and one as a principal veterinary surgeon for a large animal welfare organisation that is the largest employer of veterinarians in the UK.

Each of the six research projects is expected to further our understanding of the audit process in its own right. They are currently commencing the research stage of their work, and which they are expected to conclude towards the end of 2006.

In addition to the individual projects, the group as a whole is working to establish a framework to help establish and maintain the audit process within the veterinary profession. I have broadly referred to this as the "Guide to clinical audit", but it is unlikely that this will be solely in the form of a written publication. The exact format is still undecided, but it is most likely that at least part of it will take the form of an online resource that is designed to support the profession in undertaking the audit process, and act a dynamic interface that will allow practitioners to exchange and compare data and views on the process.

Possible functions of this resource could include:

- A repository for information about the audit process
- A forum for discussion about audit
- A guide to assist those embarking on an audit
- A site to collate data to assist the establishment of guidelines and standards

- Links to other organisations with an interest in this area

An early stage in the development of this resource can be visited at www.vetaudit.co.uk, where we have tried to offer some response to the immediate demands of the profession for more information. We are currently in negotiation with major non-territorial veterinary divisions to support the establishment of a more sophisticated site.

There will also be a requirement for a group to act as a lead body to take the profession forwards in this area, and to help develop a consensus on areas such as the coding of data, and the development of agreed guidelines for the treatment of common conditions. A great deal of resources have been poured into medical organisations such as NICE and the Healthcare Commission via the NHS, but the veterinary profession will need to establish an infrastructure that is essentially self-funded. The views of the profession regarding the format of such a lead body are being canvassed as part of the research process being carried out by the group.

Although the work of this group is still evolving, it will almost certainly have a key impact on the introduction of clinical audit into the veterinary profession as a whole.

6.2 RCVS CertAVP(VetGP)

I have continued my role in developing a postgraduate qualification for practicing veterinary surgeons as an active member of the Doctorate learning set. In addition to providing a support group for the research of each of the five members (all of whom had previously been members of the SPVS Masters Group), we have continued to strive towards achieving our original overall aim that originally brought us together.

This has been very much a collaborative effort, and my own role has centred around our relationship with the RCVS, which as our governing body, is responsible for overseeing veterinary postgraduate education. The work in producing two major documents in this area, "Meeting the post-graduate educational requirements of the General Practitioner Veterinary Surgeon in the United Kingdom", and "Proposed Structure for the Post Graduate Certificate In Veterinary General Practice" was

outlined in detail in my application for Recognition of Acquired Learning at Level 5, and the documents themselves can be downloaded via www.vetap.co.uk.

Because we felt that the RCVS was key to the development of our aims, it was strategically decided that I would stand for election to the Council of the RCVS, which I did successfully, taking up my place as one of the 24 elected members in July 2005. I had already acted as a key contact with the RCVS as an invited member on the working party that was established to review the nature of all their existing postgraduate Certificates, and this enabled me to maximise my influence on the Professional Development Subcommittee that was formed to put into action the recommendations of the original working party. At a meeting of this subcommittee that I attended on the 28th of March 2006, agreement was finally gained for the establishment of an RCVS-approved SPVS/ PDF/ MU Certificate of Advanced Veterinary Practice in Veterinary General Practice, to be known as the CertAVP(VetGP). Co-incidentally, on the same day, SPVS Council met and agreed to support the establishment of this qualification, and it is hoped that it can be up and running by November 2006, when it is likely to be one of the first of the new modular Certificates that the RCVS will be offering in place of the old one. If all goes to plan, this will be the successful culmination of more than six years hard work for our group.

The development of this important new qualification rests at the interface of my work with the Doctorate group, the RCVS, and the clinical audit MSc group, with my work impacting in all three areas. The involvement of the clinical audit MSc group has been twofold:

Firstly, four members of the group piloted a work-based learning portfolio approach to the completion of the new A and B level CertAVP modules, which can broadly be described as foundation modules. This exercise was carried out as their Professional Competence module for their MSc, and was vital in illustrating the value of this type of approach for work-based learning, but also helped to quantify the amount of work that was involved, which significantly influenced our further development of the qualification.

The two remaining members of the clinical audit group have been working on formulating a module in clinical audit that can be offered at the C (discipline-based) module level of the CertAVP, and forms a core part of the overall CertAVP(VetGP) that is now being developed.

As facilitator of this MSc group, I have been steering both projects forwards, and acted as an interface between them, the rest of the Doctorate group, and the RCVS.

Overall, it is reasonable to claim that the establishment of this totally new qualification will have a very significant impact on the future postgraduate education of vets in general practice.

6.3 RCVS Practice Standards scheme

The development of this new scheme has been a major plank in the RCVS's strategy to drive forwards improvements in practice standards, and also to move towards an agreed minimum standard. Whereas this would be at what is currently described as Tier One, there are two higher Tiers that practices can apply to join – Tier Two, which is broadly equivalent to those practices that previously operated as veterinary nurse training centres, and Tier Three, which are mainly veterinary hospitals.

Currently, most of the requirements (which are administratively quite demanding at all levels), are input based. In other words, they require the applicants to demonstrate that they have a whole range of specified documents, protocols and equipment in place. The RCVS recognises that some measure of the quality of service would be a very important indication to consumers that the higher Tier practices really were able to offer the highest quality of care to their animals. The problem is that at the time that the requirements for the Scheme were developed (during 2004), very little was known about the clinical audit process and its application to veterinary practice. Therefore, the requirements for auditing are currently couched in the most general of terms, although the Tier 3 standard specifically states that a more clearly defined requirement to carry out clinical audit will follow:

2 CLINICAL GOVERNANCE

2.1 Does the practice have a system for monitoring and discussing the clinical outcome of cases and for acting on the results?

*

The inspector will ask to see some system for monitoring and discussing the clinical outcome of some common procedures. This may vary from clinical audit reports to minutes of clinical discussion meetings but inevitably starts with some form of record keeping.

A recommended starting point would be a record of peri-anaesthetic death rates, rates of post-surgical infection and actions taken.

Defining the "quality" of care or service is very difficult to do, and clinical governance is an accepted method of evaluating performance and where there might be room for improvement.

Regular Morbidity and Mortality meetings should be held to discuss the outcome of clinical cases. Hospitals must be able to produce records of such meetings and demonstrate any changes in procedures as a consequence of any resultant action list. Continued monitoring to assess the effectiveness of any changes must be undertaken.

Auditing of the standard of hospital procedures is encouraged and may become mandatory in the future.

(Royal College of Veterinary Surgeons, 2005)

The indirect impact of my work to this aspect of the Royal College's work is obvious, because their key role is the maintenance of standards of veterinary care, and my work centres around improving our understanding of the measurement of that standard. This is reflected in the fact that the RCVS agreed to be one of the official stakeholders for my work.

A more specific example of my impact upon the RCVS Practice Standards Scheme was when I was asked to give a presentation to a meeting of veterinary surgeons

appointed by the RCVS to carry out inspections of practices registered, or applying to be registered, under the scheme. These meetings are held on an occasional basis, and some inspectors had indicated that they found the stipulations regarding clinical governance one of the most difficult areas to assess, as many of them had very little understanding of the concepts involved. The meeting was held at the RCVS on the 24th of March 2006, and I spoke about the practicalities of ensuring that practices registered at Tiers 2 & 3 conformed to the current requirements regarding clinical governance. There was also an opportunity for the inspectors to question me about the current requirements, and how I saw clinical audit developing in the future. Confirmation from the RCVS of my role in this meeting, can be found in Appendix Seven

I envisage the long term impact of my work upon the development of the RCVS Practice Standards Scheme increasing, as the emphasis of the assessment process moves more towards measuring outcomes rather than inputs.

6.4 SPVS Roadshows

In 2004 I was approached by Michael Clarke, President of SPVS, and asked if I would organise a one day continuing education course on the topic of clinical audit. Initially, the plan was to offer two one-day sessions, one in the South East and one further to the North, but subsequent demand meant that by the time of writing five such courses have been presented. The launch of the Roadshows coincided with the launch to the profession of the RCVS PSS, and the inclusion of some requirement for clinical audit undoubtedly acted as a major driver to encourage practitioners to attend the meetings.

Although SPVS has regularly organised CPD sessions for many years, no-one had previously put on any courses relating to clinical audit, so I developed the programme from scratch. I started this process by meeting with Dr Chris Jenner, who is a medical GP who is also a senior lecturer at Imperial College, and heavily involved in postgraduate training and assessment of primary care clinicians. I was able to draw on his experience to develop a programme that not only included lectures that were designed to impart basic information about the process, but also a workshop element, so that delegates were able to grapple with the practicalities of

audit design in small groups, and then present their findings to their colleagues. As the presentation of the course has spanned more than a year, at a time when I have been actively researching the audit process, it has been of interest to me to reflect upon how the information I have presented has evolved during that time, as a result of the generation of new information.

Each course has been fully subscribed, although the format has limited the numbers to just under forty at each. The impact of a total of nearly two hundred veterinarians and veterinary support staff going away to their practices armed with enthusiasm and information about the audit process should be considerable. Email addresses were collected from delegates at each meeting, and members of the mailing list that has been drawn up are already forming a nucleus of interested practitioners to support the flow of information into and out of the new online clinical audit information resource.

An example of the programme for one of these Roadshows can be found in Appendix Seven.

6.5 Publications

I have produced several publications relating directly to clinical audit. The first of these was my MSc, entitled *Attitudes to clinical audit in veterinary general practice* (Viner, 2003). Although this was not published in hard copy, it has been available online together with other information produced by the SPVS Masters group at www.vetgp.co.uk, and has been cited as a reference by others who have since written on the topic, such as Mair and White in their editorial in the *Equine Veterinary Journal* (2005).

Late in 2003 was asked to write a review article on clinical audit by the editor of *In Practice*, a supplement to the *Veterinary Record*, in response to a demand for information on the subject from the profession. I had some concerns about pre-empting the work that was getting underway with the clinical audit MSc group, but was able to circumvent that by writing *Clinical audit in veterinary practice – the story so far* (Viner, 2004), which outlined the principles involved, but made it clear that the story was an evolving one.

In September 2005 I was commissioned to write an Editorial in the *Journal of Small Animal Practice* about practice-based research, stemming from my involvement in this area for my DProf. The article was aimed at encouraging practitioners to get involved in the process, and also highlighted the potential use of clinical audit to help focus clinical research (Viner, 2005).

In November 2005, the *Veterinary Record* published a joint issue with the *British Medical Journal* on human and animal health, and I was asked to co-write an article on clinical audit with Dr Chris Jenner, who had talked at my SPVS Roadshows (Viner & Jenner, 2005).

Finally, but perhaps not least, my work with the SPVS Masters and then Doctorate Group has greatly stimulated my interest in the whole concept of reflective practice. As a result of this, I started writing a two-weekly column in the *Veterinary Times*, which is distributed free of charge to all veterinary practices in the UK. Called Reflections, it aims to combine a chatty and entertaining style, with an underlying serious message. Over the past three years I have written over seventy articles, and an example can be found in Appendix Seven, along with other publications.

I have now published many more articles on veterinary clinical audit than anyone else, and have come to be recognised as the leading expert in the field. Overall, I can claim my articles will have had a significant impact in raising awareness of the topic across the profession.

6.6 Professional development

I have outlined above how I have played a role in the professional development of other members of the profession, but my work into my DProf has also had a major impact on my own personal and professional development. The process of working through the early modules, such as the RAL and the research methodology, have given me an in-depth understanding of work-based research. In particular, I have come to develop views about the gathering and processing of data that are very different from the more traditional scientific viewpoint that was ingrained into me during my veterinary undergraduate training. I have not lost the latter, and still retain the ability to critically review and interpret quantitative data when required,

but I now understand that there are other forms of data interpretation that can be just as valid in different circumstances. This is very relevant to clinical audit, because the nature of the data that it produces is of a much more qualitative nature than that produced by scientific research, and it needs to be interpreted accordingly. I have discovered as part of my research that one of the commonest pitfalls for veterinarians embarking on the audit process is for them to try and carry out practice-based research instead, testing a hypothesis rather than applying a guideline. This seems to be a natural result of the scientific training that is inculcated into us, and has to be strongly resisted within this context as it can act as a major barrier to a successful outcome.

There are many other areas of my personal and professional development where the process of working through my DProf has had a significant impact, such as time management, presentation skills, leadership skills and the ability to facilitate and motivate the learning process of others. At a stage in my career when many practitioners suffer from "burn out" and move away from the profession, I am awakening to a whole range of new opportunities that my working life can offer to me and look forward to at least another decade working within the veterinary profession.

6.7 *Experiential learning*

Perhaps the greatest impact that carrying out the DProf and related activities has had upon my personal attitudes, and my interface with my practice staff and patients, is the understanding that I have developed of the importance of reflective practice, and its application. This too is relevant to clinical audit, as both Kolb's cycle of experiential learning and the clinical audit cycle are based upon the same positive feedback loop. I am able to apply this to all of my professional work, and also in guiding other members of staff, and veterinary students that are attached to my practice.

I have needed to study concepts of professional learning in order to understand the principles that need to be applied to the planning and assessment of the new CertAVP, and this has been applied to my own learning process. This too has an impact on the broader profession, because our Doctorate learning set has become the only group of veterinary practitioners to develop a knowledge and understanding of the concepts of

education as they apply to our professional situation. This is important because up until now only specialists working within institutes of veterinary education have been able to claim this expertise, and they have therefore controlled the nature of postgraduate education that has been offered to practitioners.

Whilst those with specialist knowledge certainly do have a lot to offer practitioners, their world view is fundamentally different, and it is only practicing vets that are truly able to identify their own learning requirements. The process has been a form of empowerment for practitioners, and has enabled us to emphasise the importance of the "soft" skills such as communications, personal and people management, and indeed, clinical audit. This has been reflected back into my own practice, and feeding on the expertise developed by other members of my learning set, I have been able to develop new client communication skills that have had a significant impact on my clinical performance.

I have not only learned about the content of the learning that is most relevant to practice, but also the learning environment. I have spent a significant amount of time studying and then applying the concepts of action learning as pioneered by Revans (1998) and developed by many other such as Weinstein (1999). This has taught me the value of a questioning approach to everything that I do, and the power of a group of like-minded professionals in a learning set to support and develop each others work.

Overall, my development of new skills of experiential learning through the DProf and associated activities has had a significant impact upon my personal world, my practice, and through my activities in the sphere of postgraduate education, the wider profession.

6.8 Practice ethos

I have discovered from my research into education, management and leadership, that the most important factor governing the success of any business is its ability to develop into a learning organisation. This has been defined by Peter Senge (1990) as

"...organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together."

The most striking characteristic of our modern society is the speed at which change occurs, and it is only by creating an environment where experiential learning is cherished at all levels, that a business organisation of any size can develop the ability to adapt to such changes, and turn threats into opportunities.

This is very relevant to the audit process, for it is in itself a process of experiential learning, and for it to thrive, a work environment where a no-blame culture predominates is essential. Further than this, the practice members need to work together as a team, where everyone accepts that there are many different ways of tackling the same task, and that they need to work together to encourage optimum performance. This can only occur if team members feel secure in their work, and do not feel threatened when the work that they carry out is subject to constructive comment.

I have found through my research that setting up the structure needed to allow the audit process to function naturally encourages this ethos: it provides a context for the establishment of clinical teams that constructively review what is being done, and why. Just this part of the audit process alone is very valuable.

I have learnt to understand the difference between management and leadership as outlined by Storey (2004). Any organisation requires some of both, but if the optimum type of leadership predominates, micro-management of everything that individuals working within that organisation carry out becomes less important, as they better understand the role that they need to play within the workplace and learn to develop their own abilities.

An example of this leadership role that I have developed as a result of my DProf studies has been upon attitudes within my workplace to learning itself. I have not attempted to manage each individual's learning, but have shown by action and word that I consider learning to be an essential part of each person's role within my

practice. By giving individuals control over their professional development budgets, and encouraging them to reflect upon the structure of their learning, and retrospectively, what they have gained from it, I have empowered them to take responsibility for it.

This has been demonstrated on an individual level as well in a general ethos. The reflections of the veterinary surgeons involved in the audit process demonstrate how they found the process intellectually stimulating. Several key members of staff are now looking for suitable academic frameworks to support their further learning. For instance, my partner is now actively investigating registering for an MBA with the Open University. The development of the veterinary nurse that led the weight control audit within the practice is also of interest. As she developed impressive skills in carrying out and reporting on the audit process, I invited her to make a presentation to the Clinical Audit Roadshow, illustrating the pivotal role that veterinary nurses can play in the process. She had no previous experience of presenting, and found the thought of doing so to an audience of veterinary surgeons extremely daunting. However, with appropriate support she was able to develop an excellent presentation on the role of veterinary nurses in the audit process, which was very well received by the audience. I am now encouraging her to embark on another new experience, and write up her experiences for the *Veterinary Nursing Journal*, since that aspect of audit has never been reported upon.

Whilst the impact of my DProf within my workplace has obviously been more localised than a lot of my other activities, it has been significant and of vital importance to my own professional life. Apart from the satisfaction of knowing that my staff are working in a stimulating and rewarding environment, it is only by running a business that is able to thrive successfully without my continual presence, that I can afford to pursue the other activities that draw me away from it.

6.9 RCVS Practice Standards Scheme Tier 2 approval

The manner in which my activities have had an impact upon the RCVS PSS have already been outlined. However, they have also had an influence within my workplace, because my own practice applied for and achieved Tier 2 status early in 2005. This was a major undertaking for my practice manager, who had only recently been promoted into the job. Our activities in the field of clinical audit meant that it

was very simple for us to provide minutes of our audit meetings as evidence of our competence in the area of clinical governance.

6.10 Improved delivery of service

The ultimate aim of the clinical audit process is to positively impact upon the quality of service that it delivered to our clients and the animals for which they care. The results of my research have helped to demonstrate how clinical audit can be a highly effective tool to improve clinical practice. This has had a direct influence upon my own patients, but thanks to the broader context of my activities as described above, I hope that clinical audit will be taken up on a much wider scale by the profession, which has the potential to help to improve the treatment that millions of animals receive in the future.

6.11 Summary

In summary, I return to the quotation from Portwood and Costley (2000) that I referred to in Chapter 3, about work based research within the context of the MU Doctorate programme:

“Most common research projects at MU are evaluative studies of systems cultures and practices in the workplace. The most advanced engage in praxis whereby a critical examination of the theory and practice issues in change. Thus WBL can generate knowledge as well as apply it.”

This chapter has illustrated how my work has been characterized by this blending of theory and its practical application to bring about change within my profession. The preceding chapters have illustrated how my literature review, practice-based action research project, focus group research, and questionnaire have all developed my knowledge and understanding of the clinical audit process. The action research project, like all good action research (Coghlan and Brannick, 2001), has been centred around change in the workplace. I have now illustrated how this process of change has also been taken out into the profession as a whole, and is already bringing about significant change.

A testimonial to the impact of my work has been provided by Professor David Lane, who has been deeply involved with the overall project since the start of the SPVS Masters Group, and can be found in Appendix 7.

Chapter 7 conclusions and recommendations

"My research aim is to investigate the practicality and effectiveness of introducing clinical audit into veterinary practice"

This project has spanned the last three years as a piece of Doctoral research, although it actually commenced more than five years ago, when I started researching clinical audit for my MSc. A vast amount of data has been gathered – far more than could be included in this report – and the time has now come to draw it all together to produce my conclusions about the introduction of clinical audit to the veterinary profession. As is to be expected in the real world, events have not remained static whilst I have been carrying out my work, and clinical audit *is* gradually being introduced into veterinary practice. I have shown in Chapter Six how I have played a role in shaping how this has taken place, and I am optimistic that this project will provide a soundly researched base to take clinical audit forwards in a positive manner.

My research has illustrated the value of a multiple-methodology approach to evaluating a wide-reaching project, both within my workplace and carried out into a wider professional environment. I have been able to utilise the energies and enthusiasm of some of my fellow professionals to act as co-researchers in certain areas of my work – my clinical team for my work-based action research, and the members of the MSc clinical audit for other aspects, particularly the focus group. By careful attention to the methodology, I have been able to recognise and deal with any resulting bias, and they have brought very significant benefits compared to what I would have been able to achieve working alone.

I shall deal with the following issues in this chapter:

- 7.1 The answers to my research questions
- 7.2 The general conclusions I have reached from my project activity
- 7.3 My recommendations for further action
- 7.4 A vision of the future development of clinical audit

7.1 Research questions

Any research process should set out with the intention of answering the research questions that are established at the outset, although it is not unusual for qualitative research to subsequently throw up new and unanticipated information as it develops. The ten research questions have already been answered in various parts of my report, primarily section 5.6, but I draw them together here for completeness:

7.1.1 What is clinical auditing?

Having carried out a literature review, I had originally established a definition of clinical audit as part of my MSc dissertation (Viner, 2003), but have now modified it. I have decided to change the definition from one of "clinical audit", to one of "the clinical audit cycle", for the reasons outlined in Chapter 5.6.1. I have changed the use of the word "protocol" to "guideline" after reflecting upon the outcome of a focus group discussion within my MSc group (see 5.6.1). I have also changed the word "monitoring" to "measuring", to emphasise that audit does have to involve the measurement of specific and relevant criteria that relate to the delivery of clinical service:

"The Clinical Audit Cycle is a quality improvement process in clinical practice that seeks to establish guidelines for dealing with particular problems, based on documented evidence when it is available, measuring the effectiveness of these guidelines once they have been put into effect, and modifying them as appropriate. It should be an ongoing upwards spiral of appraisal and improvement."

7.1.2 What areas of clinical veterinary practice are best measured, and how?

They should be significant (clinically and/or financially), common, amenable to measurement, and have room for improvement. (See 5.6.2)

7.1.3 What steps does a practice need to take to set up clinical auditing protocols?

In the light of experience to date, I think this research question should be rephrased to ask "What steps does a practice need to take to prepare for the audit process?". This encompasses the question above, but is more helpful to someone setting out.

It is clear from my own practice audits (see analysis tables in 5.1), the results of workshops carried out during the SPVS clinical audit Roadshows, and the questionnaire results (see under "common pitfalls"), that it is essential to carefully plan the audit from the outset. The research has shown that once a topic has been chosen, issues of particular importance are:

- Forming a cohesive audit team, involving nursing staff when appropriate
- Establishing and communicating clear guidelines informed by the best evidence available
- Thinking carefully about the type of audit (process or outcome) and establishing clear criteria that can readily be measured
- Considering the resource implication, particularly demands on time
- Taking care not to try and run a practice-based research project rather than a clinical audit

7.1.4 How best to record and retrieve data

The retrieval of information using current PMS's is achievable but not easy. There is a need to establish an agreed coding system to simplify the retrieval, analysis and exchange of data (See 5.6.4).

7.1.5 How best to set and compare standards

Standards, or targets, can be established by internal or external comparisons (see 5.6.1), whereas the comparison of standards to improve performance, better defined as benchmarking, is already being trialed by the clinical audit MSc group, but needs an improved infrastructure and coding system for it to flourish (see 5.6.8). The POC joint audit with other members of the MSc group was able to demonstrate that it is possible to generate some statistically valid performance comparisons in this way, but more data needs to be gathered and analysed to build upon this (see 5.7).

7.1.6 How do the veterinary and support staff feel about the process?

See 5.6.6. Every aspect of the research, including the practice interviews carried out as part of my action research project (see section 4.7), have shown that clinical audit can be a very positive, team-building exercise. In particular, veterinary nurses can play a key role in the audit process and thus become better integrated into the clinical team.

7.1.7 What are the benefits of introducing clinical auditing into a veterinary practice?

- As a tool to monitor and improve clinical performance
- To improve professional job satisfaction
- To help standardise the care administered
- To assist with creating a no-blame culture within the clinical team
- To conform with the RCVS practice standard guidelines for Tiers 2 & 3
- To reassure the public
- As a management tool to increase practice income
- To avoid having it imposed externally

7.1.8 What are the problems with introducing clinical auditing into a veterinary practice, and how can they be overcome?

The common pitfalls have been dealt with under 5.6.5 above. The main means of overcoming them is by being aware of them and planning the audit carefully. The workshop section of the SPVS clinical audit Roadshows have demonstrated that however much information is imparted in lecture format, it is only by sitting down and grappling with the issues that a clinician comes to learn how to approach the exercise. Clinical audit is a skill that needs to be learnt, and there are several proposals to help the practice develop those skills (see 7.2 below). In order for compliance with the audit process to remain at a high level, results need to be fed back to the audit team on a regular basis, and guidelines regularly re-inforced.

7.1.9 What is the cost/benefit analysis of clinical auditing?

My MSc work-based research project (Viner, 2003) demonstrated that concerns about cost were considered to be a significant barrier to the introduction of clinical audit to the veterinary profession. One overall finding of this research project was to discover that clinical audit can be a very effective management tool for increasing practice income. This is summarised in table 10 in section 5.1. The ratio of cost and benefits to a practice is often difficult to quantify, because the process can improve practice profitability by improving client confidence and bonding, but in some instances a clear cost benefit can be demonstrated. Counteracting this is the extra time demands that the audit process undoubtedly makes upon the clinical team.

The final balance of cost-effectiveness of the process will depend upon the degree to which staff are already fully employed within the practice. Where time can be found during slack periods to carry out additional procedures and deal with the extra administrative work involved, the benefits will be much more clear cut than when extra staff need to be employed to carry out the work. Care needs to be taken to avoid over-stretching staffing resources and thus causing significant work-related stress.

7.1.10 Is clinical auditing a practicable and effective means of maintaining a high standard of veterinary general practice?

This is the key question, and I will deal with it in 7.2.6 below.

7.2 General conclusions

7.2.1 Audit and learning

Clinical audit itself is a learning process, closely following the format of Kolb's cycle of experiential learning, where an improvement in performance is achieved by measuring the effect of changes that we put into place and reflecting upon their influence. It has been interesting to apply the principles of work-based learning that I have developed over the past six years to the subject itself. Therefore, I have learnt not only from the research process itself, but from the whole range of activities in which that work has been contextualized. This learning includes:

- The political processes that determine the shape of the framework that governs our professional work, and about the leadership strategies that have to be developed in order to influence them.
- Presenting information on clinical audit to professional colleagues in a format that in turn stimulates them to learn, and in so doing, I have learnt from the feedback I have received during the workshops and discussions at the Roadshows.
- Facilitating a group of MSc students, and trying to encourage them to produce their best. But being a group of highly experienced and opinionated practitioners, I have learnt at least as much from them as they have been able to extract from me.

The primary part of my research involved worker-researchers investigating the practical application of clinical audit into the environment of a suburban companion animal practice. As such, it was not designed to portray a "Utopian" situation, as an idealised model of the perfect application of the clinical audit process. Rather, it was a real-life, warts-and-all portrayal of the practical trials and tribulations of applying the process to a busy practice for the first time. Therefore, the most important outcome of this part of my research is not necessarily the processes themselves, but the lessons that were learned when they were applied.

Although I guided the audit team, I purposely allowed each audit to take on its own shape, primarily determined by the interests and personality of the clinician that led each one. Thus I need make no apologies for the fact that the six audits vary greatly in style, content, strengths and weaknesses, because this has multiplied greatly the learning that I could gain from simply attempting to impose six audits upon my colleagues.

7.2.2 Audit and the practice ethos

This leads me on to one of the major themes that has emerged from my research: clinical audit will only function effectively if it introduced as a team effort with the shared aim of improving the standard of clinical care. Any attempt to impose it externally will result in it becoming a bureaucratic exercise that is carried out to satisfy that authority, and all sorts of ruses will be used to circumvent it.

The practice culture required for its successful implementation is of a learning organisation, where everyone constantly strives to learn experientially from their work, secure in the knowledge that their colleagues are working as a team to support them, rather than waiting for an opportunity to stab them in the back. What I have found particularly interesting, is that the no-blame team culture that clinical audit requires, is in turn one of the greatest benefits that introducing audit can bring. The process of establishing an audit team that meets to look closely at how common procedures are approached, how they can be improved, and how best practice can be encouraged is of immense value. It does not need clinical audit for it to occur, but setting up the audit process can act as a tremendous catalyst by encouraging its development. Care needs to be taken to ensure that any strain caused by the extra

workload that the audit process puts upon the team members does not act to negate these benefits.

7.2.3 Audit and clinical evidence

One product of questioning how we carry out our daily clinical work is that when we look at the evidence base for what we do, we realise that a great deal of it is based upon opinions, assumptions, and evidence that does not stand up to close scrutiny. It is not possible for us to trawl the literature for every condition that is presented to us, but the audit process provides a structure for this to occur. This search for an evidence base is extremely healthy, and will hopefully encourage the exchange of information between specialists and practitioners to establish mutually agreed guidelines for some of the more common conditions that we encounter. In time, the audit process may help to generate a demand for more clinical research that is specifically geared to the needs of practice.

7.2.4 Audit and research

Another major theme of my work follows on from this - the place of practice-based research in the audit process:

All veterinarians are currently selected to have a scientific background, and trained accordingly. So although there is inevitably a great deal of "art" in the practice of veterinary medicine, the profession is naturally drawn to a strictly quantitative view of what is worth knowing. One of the major pitfalls I have discovered in the design of audits, is that veterinarians are naturally drawn to try and produce a piece of clinical research. The two processes have similarities, but there is a fundamental difference: the audit process is a management tool designed to promote best practice, whereas scientific research is designed to test a hypothesis, and so may help to formulate best practice.

This matters, because a scientific experiment has to be designed with a rigour that does not have to apply to the audit process: a control group has to be formed; the numbers involved have to be large enough to be statistically significant; and ideally there will be some form of blinding to minimise bias. Trying to design an audit along these lines will usually result in failure.

This difference is also reflected in the way in which the data that is generated by an audit should be viewed. If it is viewed as scientific data and the standard tests applied, it is usually very difficult to measure a statistically significant difference between the outcomes before and after changes were put into place. However, if the data is viewed as performance indicators, and investigated qualitatively in more depth where appropriate, logical actions can be based upon these results. They cannot be “proven” to be scientifically valid and thus generalisable, but particularly once their effect has been measured with a further review of the audit cycle, they can be used sensibly to guide our actions in an informed manner.

But audit can potentially assist the research process in two ways. Firstly, by highlighting areas where the evidence base is deficient, it can help drive research in a direction that is clinically relevant. Secondly, it is possible for audit data to be collated to provide valuable first opinion data about diseases and their treatment. If audits are carefully designed, they can even feed information into larger research projects that are truly designed to scientifically test hypotheses.

7.2.5 Audit and the RCVS

The RCVS is a major driver for the uptake of clinical audit within the profession. Although only Tiers 2 & 3 currently require any degree of clinical audit as compulsory, it is made clear in the Standards that this will be enhanced with time.

One commonly voiced criticism of the RCVS scheme is that it only measures processes and not outcomes, and clinical audit is arguably the most important arbiter of the standard of a practice. However, at the time the scheme was devised, very little was known about the application of audit to the veterinary context, so it would have been very difficult to include more demanding requirements in the scheme. It is acknowledged that this will increase in future.

The RCVS is also responsible for supervising postgraduate education for veterinary surgeons, and my involvement with the development of this new qualification, assisted by members of my Doctorate and clinical audit MSc groups, has ensured that clinical audit is included as a Key Professional Skill that all candidates will need to cover. It will also be available as a “C” module for those wishing to hone their

auditing skills further, and this module is likely to form a core part of a new CertAVP(VetGP) that is proposed as a specific qualification for GP vets within the framework of the new modular scheme.

My work has made a significant impact on the awareness of the profession in general to clinical audit, and through the future development of the PSS and the CertAVP in conjunction with the RCVS, this should grow strongly.

7.2.6 So is clinical auditing a practicable and effective means of maintaining a high standard of veterinary general practice?

My project findings, as outlined in Chapter 5, and particularly the benefits of clinical audit, as summarised in 5.6.7, clearly demonstrate that all three prongs of my research agree with the proposition that, properly carried out, clinical audit can be a very useful management tool to achieve and maintain a high standard of veterinary general practice.

This is far more likely to be the case if it is carried out with a positive approach, as a means of improving professional satisfaction from our work, rather than just as an added piece of bureaucracy.

It's a well known business adage that "If you can't measure it, you can't manage it". On reflection, there are all sorts of things that we manage that we cannot measure, but it is true that it is only by measuring performance that you can prove that you are affecting it, which makes the management process likely to be more effective. It also enables one to objectively demonstrate to other stakeholders, such as our clients, how we are performing. This is clearly relevant within the context of a practice standards scheme, as outline in the previous section.

It is not possible to audit all our clinical activities, but by carefully selecting topics that are particularly important, or liable to improvement, we can improve our performance in those areas. There is also evidence to suggest that by carrying out the process, we can make improvements within the practice culture that may produce benefits in other aspects of our work. To be effective, all aspects of the audit

need to be kept simple and clearly defined, and the temptation to stray into practice-based research needs to be resisted. Team members need to be regularly kept informed of the results of their efforts, and guidelines constantly reinforced, to avoid compliance falling off as initial enthusiasm wanes.

My MSc research (Viner, 2003) identified that the profession perceived time and financial resources as key barriers to the introduction of clinical audit. My Doctoral research has reinforced the fact that in order to succeed, sufficient protected time must be made available for the work involved, and this has significant cost implications. What has emerged from my work, is that there are also significant cost benefits that can be gained from the audit process, that may help to overcome some of the cost barriers. Using clinical audit as a management tool to enable the whole of the clinical team to improve owner concordance with our recommendations for treatment can bring not only major cost benefits, but also (and importantly from an ethical viewpoint), corresponding welfare benefits to our patients by managing their disease problems more effectively.

7.3 Recommendations

1. The RCVS continue to view clinical audit as a core competence that should be required of any veterinarian that wishes to be considered an advanced practitioner.
2. The RCVS enhance the profile of the Practice Standards Scheme within their Standards with time, to encourage participating practices to measure and improve their clinical performance.
3. The BVA and its non-territorial divisions such as the BSAVA and SPVS support the work of the clinical audit MSc group in producing a "Guide to clinical audit" that serves to assist practitioners wishing to introduce the process. It should be in a format that can also act as a focus for the exchange of information and development of knowledge about the audit process.
4. The profession establish a lead body to continue to drive forwards the work currently being carried out by the clinical audit MSc group, and to reach a professional consensus on vital issues such as a common coding system for the storage and retrieval of clinical information, and the development of

agreed guidelines of care. Question 5 of the questionnaire suggests that a consortium of specialist divisions, perhaps co-ordinated by the BVA, would be most suited to this task.

5. Veterinary research institutions work increasingly closely together with practitioners, taking advantage of the audit process to facilitate the exchange and analysis of first-opinion clinical data, and to help guide the shape of clinical research.

7.4 The future

Clinical audit is not the be all and end all of clinical practice – it is a means towards an end. That aim is an objectively measurable improvement in the standard of care that we are able to offer to our patients.

My work has started off a process whereby the awareness of clinical audit within the veterinary profession has increased significantly, and I trust that this will continue, so that audit can thrive as a management tool that will bring many benefits to veterinary practice. It is most likely to continue in this light if it is encouraged as part of a voluntary standards scheme, rather than being forced upon the profession from outside.

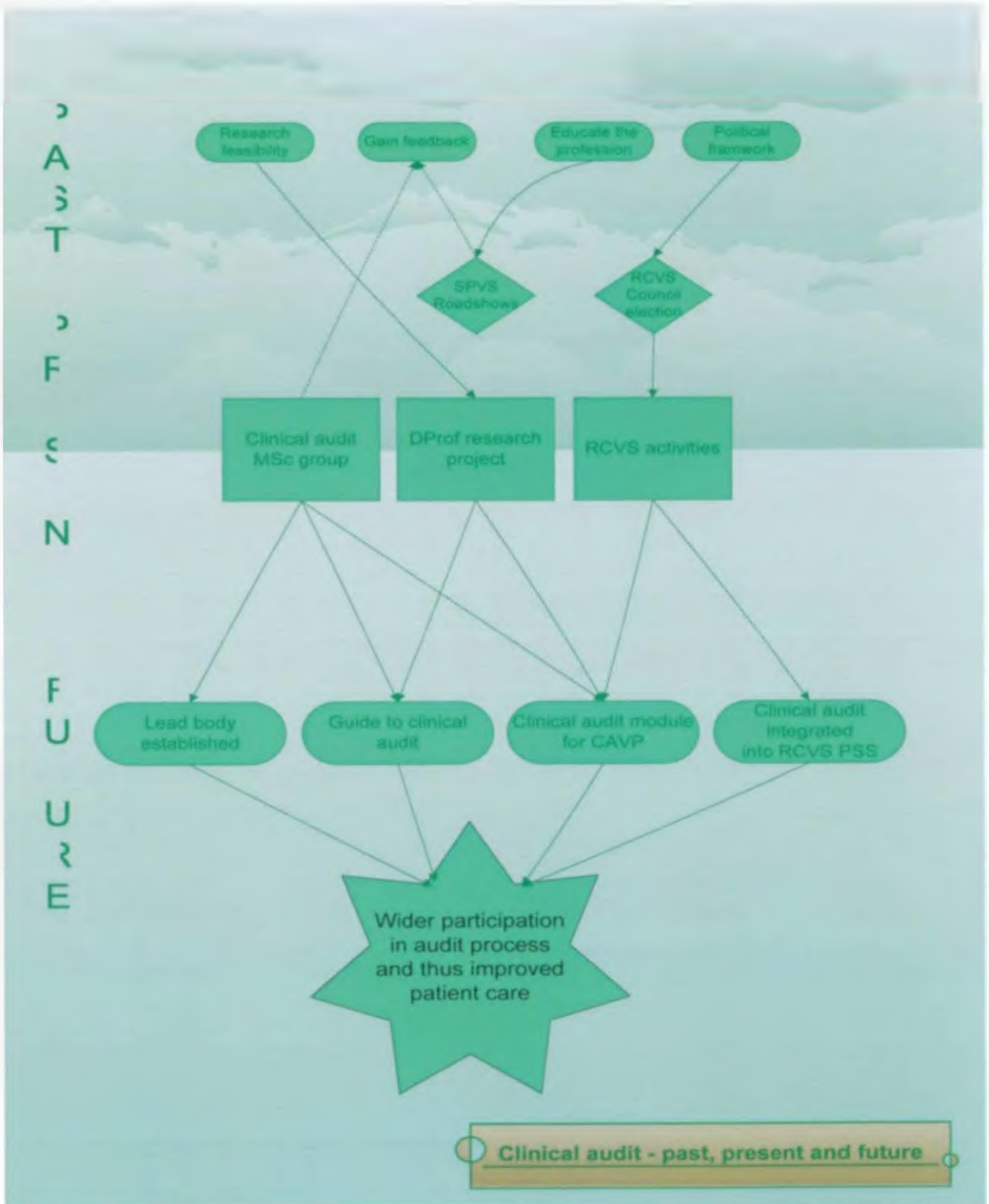
Enhancement of the role of audit as a quality indicator within the RCVS PSS will drive this forwards, and the process will be supported by inclusion of clinical audit within the new CertAVP. In time, this will hopefully extend to the undergraduate curriculum.

The activities of the clinical audit MSc group will draw to a conclusion towards the end of 2006, but I hope that the excellent work that they are carrying out will provide a platform for a more permanent infrastructure to support the audit process. We will never be able to match the resources that have been poured into the NHS for this purpose, nor should we try, but I look towards our national veterinary associations for the vision to provide the political and financial framework that will be required to obtain the maximum benefit from the process.

Commercial demand from practices will help to encourage the many practice management system suppliers towards meeting the needs of those practices that carry out audit. If a lead body is able to guide the profession towards a common coding system, the automated transfer of clinical data would greatly assist the development of agreed standards, and the incorporation of audit data into carefully designed and coordinated clinical research projects.

I hope to see an online clinical audit guide develop as an interactive resource that empowers practicing vets to contribute towards the development of the process, as well as providing information and assistance to them.

Finally, I look forwards to the day when clinical audit is accepted and appreciated as an integral part of veterinary general practice.



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