Clinical audit in veterinary practice: theory vs reality

Clinical audit is an effective tool for assessing and improving the clinical care provided to patients. Good guidance has previously been provided in the veterinary literature as to how to conduct clinical audit in veterinary practice (Mosedale 1998; Viner 2009, 2010, 2012; Dunn 2012; RCVS Knowledge 2015). These resources go in-depth into how you might conduct audit and the types of topics you might choose. The combination of the limited veterinary evidence-base and the reality of practice, however, makes traditional clinical audit as per the framework derived from the medical field, challenging to implement in the veterinary setting. We discuss some of the contentious issues relating to the application of clinical audit in veterinary practice and examine the benefits of utilising audit to improve patient care.

What is clinical audit?

Clinical audit is widely used in the National Health Service (NHS) to monitor and improve the standard of clinical care provided to patients (HQIP 2010). The Oxford online dictionary currently defines audit as a *'systematic review or assessment of something'* (OUP 2015a). In the NHS, audit is defined by the National Institute of Health and Clinical Excellence (NICE) as *"a quality improvement process that seeks to improve patient care and outcomes through systematic review of care and the implementation of change*" (HQIP 2009). In the medical profession this is often done by measuring the services provided against evidence-based standards, or guidelines. 'Standards', along with 'guidelines' are terms commonly used in association with clinical audit in both the medical and veterinary fields; these will be discussed in further detail later in this article.

The reality of clinical audit in the veterinary context

There are a number of issues facing the veterinary profession that makes the direct translation and interpretation of the clinical audit framework used by the medical field challenging.

1. The steps involved in clinical audit

The clinical audit process is commonly described and depicted as an audit cycle. The general process of audit can roughly be broken down into a five step cycle, as shown in Figure 1. A topic should be chosen to audit and preparations made in relation to the logistics of how the audit will be carried out. Data is then collected and analysed, and a discussion held to decide if and how changes need to be made. Those changes are implemented, and a re-audit run to see what effect they may have had.

Figure 1: The clinical audit cycle

However, stages of the audit process as demonstrated by schematics of the audit cycle vary greatly in the veterinary literature (Table 1). These varied suggested processes that make up

the clinical audit cycle can lead to confusion and difficulties in determining how to carry out an audit. Some audit cycles suggest that clinical audit explicitly involves comparing clinical practice to pre-existing 'gold standards' (Dunn 2012), while others suggest that due to the lack of pre-existing standards in the veterinary profession, the process should be about creating guidelines to then audit against (Viner 2009).

Some of the cycles depict that clinical audit should be based on standards derived from evidence-based veterinary medicine, but not all suggest assessing against the standard (Table 1). There is a well-documented lack of evidence-based standards available that relate to first opinion veterinary practice (Mair and White 2008; Mair 2009; Wylie 2015), which may explain some of the variation. The re-audit stage is also a crucial part of the process where progress made after setting new goals and implementing changes can be assessed. However, this is advocated in very few audit cycles (Table 1).

Table 1 Stages of the audit process, as depicted in published schematics of the audit cycle by various authors in the veterinary literature

Publication	Prepare for audit	Define a standard	Set criteria	Create protocols or guidelines	Pilot the audit	Collect the data	Measure performance	Assess current practice against the standard	Analyse the data/assess outcome	Make changes	Re-audit
Mosedale (1998)		✓	✓			✓		✓		✓	✓
Rayment (2002)	✓				✓	✓			✓	✓	✓
Mair (2006)		✓						✓	✓	✓	
Godsall (2008)	✓		✓			✓				✓	
Mair (2009)	✓	✓							✓	✓	
Viner (2005, 2009, 2010, 2012)	✓		✓	✓			✓		✓		
Dunn (2012)	✓	✓				✓		✓		✓	

It could be argued that the differences between audit schematics in the veterinary literature are due to the fact that they are explained as different types of audit; this will be discussed in detail later in the article.

The key aspects of the audit process that do appear to be agreed on by the majority of the veterinary authors include the following:

- Audit should be a continuous cycle

- Audit should utilise the best available evidence (where applicable)

- Audit should lead to improvements in patient care

Greater benefits are gained if the process is performed as a cycle, where continued monitoring, changes and improvements are made (Mosedale 1998; Rayment 2002; Viner 2005; Mair 2009; HQIP 2010; Dunn 2012). Ultimately, this should lead to an upwards spiral of overall improvement in the quality of clinical care provided (Mair 2009; Viner 2009; HQIP 2010).

2. Defining what standard is used in the clinical audit cycle

The Oxford online dictionary definition of 'standard' is:

i. A level of quality or attainment *'The practice provides a high standard of clinical care to its patients'* OR

ii. A required or agreed level of quality or attainment *'The practice met the strict health and safety standards outlined in the document'* (OUP 2015b)

When considering 'standards' as a level of quality, we can safely assume that the vast majority of veterinary surgeons aim to offer high standards of care to their patients. In reality,

standards of care provided by a practice may range from suboptimal to excellent; here clinical audit can be used to assess the clinical ‘standards’ and ultimately improve them.

Some authors of papers on clinical audit advocate defining a ‘standard’ as more like the second definition above - a required level of quality. This particular use of the word ‘standard’ relates to a more complicated concept. The NHS often uses the NICE guidelines to audit against, and these guidelines act as ‘standards’ in this context. The equivalent evidence-based guidelines do not tend to exist in veterinary medicine, and there are few results on studies collected from first opinion practice that can act as ‘standards’, which makes this type of scenario difficult to execute. Some authors suggest setting your own standards to audit against (Rayment 2002; Burford and others 2014) and this may be appropriate in some instances, but the standards chosen may be somewhat arbitrary if little is known about the baseline level. Another way of identifying a standard for your practice is to run an initial round of audit (known as a service evaluation (NHS 2014)) and use this as your future standard to audit against (Burford and others 2014). The various possible ways of defining standards for use in clinical audit are discussed using an example in Table 2.

Table 2 Defining your standard

Clinical audit scenario: Five dogs have been admitted with, and tested positive for parvovirus in the last month. The practice would like to audit the vaccination of dogs registered with the practice as the vets feel that because parvovirus can be prevented, it is a disease that should not be occurring in large numbers. They feel there is room for improvement.			
Scenario		**The standard**	**Comments**
Use evidence-based standards	You look for an evidence-based standard to audit against	A quick Google search brings up the WSAVA Vaccination Guidelines. These state that **65 - 75%** of the population needs to be vaccinated to prevent the outbreak of an infectious disease (Day and others 2010). This figure was not accompanied by a reference so it is unknown what research this figure is based on.	This figure is a good place to start. However, a definite figure for parvovirus in dogs specifically was not easily found. In human medicine, 95% of people need to be vaccinated against measles for herd immunity to be effective (OVG 2015) so potentially the figure could be a lot higher. The percentage of the population needing to be vaccinated to give good herd immunity will depend on many factors. Any figures found in the evidence however, can certainly be taken into consideration.
Set your own 'standard'	You can't find a solid evidence-based standard that relates to your circumstances so you create your own	The practice team feels that **95%** of the dogs registered with the practice should be vaccinated as this represents the best clinical care for the patients.	There may be some situations where setting your own standard is appropriate. However, care should be taken with the level the standard is set at - setting a high ideal standard may lead to disappointment after the first round of audit – for example, if only 20% of the practice's dog population is being vaccinated annually, 95% may seem completely unattainable and discourage the practice from continuing with the audit.
Run an initial round of audit to create your own 'standard'	You feel that the evidence-base may not be appropriate to the circumstances of your practice and want to investigate your baseline of cases first before you decide on a suitable level of improvement	You're aware that many of your clients often bring their dogs in late for their booster vaccinations, so you search the last 18 months of clinical records and discover that **40%** of the dogs registered with your practice have been vaccinated in that time.	Running an initial round of audit has given you a real figure on which to base your improvement. Additionally, this will enable you to set a more realistic target in your next round of audit which should help with staff motivation.

Criteria identify what is being reviewed as part of the audit and should be describable and quantifiable (NICE 2015). However there appears to be confusion in some publications about the difference between criteria and standards.

The NICE guidelines used by the NHS in many cases as 'standards' are recommendations based on the best available evidence such as systematic reviews and randomised controlled trials (NICE 2015). They advise on how people with specific conditions should be cared for by healthcare providers (NICE, 2015). Viner (2009) suggests that the veterinary audit process should involve the establishment of guidelines to audit against. The development of evidence-based veterinary clinical guidelines is a challenging and detailed process, often involving the creation of the evidence initially and may be difficult for busy vets in practice to do. There may however, be situations where at the practice level, staff wish to create localised guidance for certain procedures to ensure consistency of care. Localised guidance should be re-evaluated on a regular basis by consulting the literature for any new evidence that arises.

3. Reasons for undertaking clinical audit

The divergence of pre-setting standards in comparison to creating your own, and other differentiations between the various published audit processes, may be as a result of the different reasons that audit is undertaken, and the different types of audit that can be carried out.

3a. Benefits of carrying out audit

Previous articles have highlighted the benefits of carrying out audit (Mosedale 1998; Rayment 2002; Mair and White 2008; Viner 2005, 2009; Dunn 2012), with many emphasizing why audit is useful in relation to clinical governance and how it meets requirements set out by the Royal College of Veterinary Surgeons (RCVS) (RCVS 2014, 2015). Undertaking audit shows continual

monitoring and improvement of clinical standards in relation to the RCVS Practice Standards Scheme (RCVS 2014).

However, clinical audit can bring many further benefits to veterinary surgeons and practices than those cited in relation to clinical governance. It is likely that the numerous reasons for undertaking audit may be the cause of why various definitions of the audit process exist in the veterinary literature, and is likely therefore to lead to confusion as to how to best undertake audit. From an evidence-based perspective, the primary goal is to ultimately improve decision-making at the level of the patient, and clinical audit sits within this framework, whatever aspect is focused on. Clinical audit can be incorporated into different aspects of veterinary practice to bring benefits to individuals, the team, the patients, the practice and the profession. This multifaceted relationship can be depicted in Figure 2.

Figure 2 How clinical audit is beneficial to veterinary practice

Patient care – Clinical audit is central to patient care (Mair and White 2005). It can be used to assess the quality of care being provided by a practice and as a tool to improve overall patient safety (Oxtoby 2014).

Professional development – Clinical audit allows you as an individual to monitor how well you perform as a clinician, and to improve your own processes and outcomes. Audit may highlight areas where you need further training or Continued Professional Development (CPD), as well as itself counting towards your CPD requirement (Moore and Klingborg 2003). It can also be used to highlight areas where good practice is being undertaken.

Practice interests – Clinical audit allows the practice to gather information on clinical activities. Audit may be used as defence in litigation cases, and as a part of defensive medicine (Mosedale 1998; Dunn 2012). Clinical performance can be compared with other vets and practices through benchmarking, and the results of audit can be used to demonstrate how efficient certain clinical services are (Mair and White 2008). Viner (2009) also suggests that clinical audit can increase the confidence of the public in the veterinary profession as well as being used as a tool to increase the income of the practice.

Evidence-based veterinary medicine – Audit is an effective way of undertaking evidence-based medicine (Warman 2014) and can be used to demonstrate the benefits of certain procedures or treatments, as well as highlighting research gaps, or areas requiring further research (Viner 2009). It allows clinical standards to be improved in an evidence-based way (Dunn 2012).

3b. Types of audit

Clinical audit has been described in a number of different ways by different authors. The differing definitions of audit could also be due to the many different 'types' of audit that can be undertaken. Table 3 highlights the different types of clinical audit as described in the veterinary literature.

Table 3 Different types of clinical audit that have been discussed in the veterinary literature

Type of audit	Description	Example	Positives	Negatives	Comments	References
Criterion	Compares clinical practice against a specified protocol, guideline or standard	Against a guideline: Are all vets following the guideline on how to prepare the patient for surgery? Against a standard: How many dogs die under general anaesthesia? One study shows a death rate of 0.14% (Mosedale 1998).	Determines if the right thing is being done, based on what should be done	Requires pre-set protocols, guidelines or standards that ideally should be evidence-based	Lack of evidence to create protocols, guidelines or standards does not need to be a barrier to running criterion audits. Local guidelines could be created for your practice based on a general consensus of staff in your practice, along with the best available evidence. If auditing against a standard with no evidence on what that standard should be - run the audit once to give yourself a benchmark, and then use that as your standard going forward	Mosedale (1998); Rayment (2002); Viner (2009); Dunn (2012)
Process	Examines the process of the medical care provided	What treatment do down cows receive at first examination?	Gives an overview of how clinical care is being carried out	Need to take into account that processes may differ depending on the clinical presentation of the patient and other variables	A process audit can be a good starting point for determining what is happening in the practice. Many people assume that the same process of care is being provided to each clinical case, so the results can be an interesting point of discussion	Moore and Klingborg (2003)
Outcome	Examines the outcomes and results of clinical practice	How many wounds post caesarean become infected?	Demonstrates the results of the clinical care being provided. Allows individuals to monitor results of individuals or groups of cases	Outcomes are not always the most important part of clinical care to review. Many different factors can affect an outcome - especially when a third party, such as the client, is involved in care	Outcome audits are often a good place to start if the practice has no prior experience of audit. If results from outcomes audits are less than satisfactory, a process audit could be run to see where things need improving in the system	Mosedale (1998); Rayment (2002); Moore and Klingborg (2003)

User view	Gathers the views of the clients on the service provided by the practice	How helpful do clients consider reception staff to be on a visit to the practice?	Gathers information directly from the customers	Requires clients to give up time to complete a questionnaire. Information gathered is view of only one party	Consider if and how you might want to inform the clients of the results	Rayment (2002)
Chart review/case review	An external reviewer evaluates certain cases	An external, advanced equine practitioner evaluates the clinical records of all horses diagnosed with, or treated for colic by the practice in the last 12 months	Can be an effective way to change, or reward, the behaviour of some clinicians	Time consuming and costly to run	This type of audit requires very detailed notes in order for the process to be worthwhile	Rayment (2002); Moore and Klingborg (2003)
Significant event	Is run in response to a significant event which may be good or bad	What events lead to an inpatient escaping and running away from the practice?	Allows all staff members involved with a significant event to discuss what happened, with the goal of ensuring it is prevented in the future (if an adverse event), or repeated it if it was something that went well	Needs all staff members involved in the event to be brought together for the discussion. Staff can be made to feel like it is a blaming exercise if not handled correctly	Can also run on a 'near miss' event. Must create a no-blame culture when discussing adverse events to ensure all details are gathered and incidents can be prevented in the future	RCVS Knowledge (2015)

There is often some confusion between what is audit and research. While some types of audit may seem similar to research, there are some very clear differences. Put simply, clinical research is concerned with finding the best way to do something, while clinical audit is about finding out if the best thing is being done (Smith 1992). Viner (2009) and Wylie (2015) clearly highlight the main differences between audit and research.

What does this mean for me in my practice?

Burford and others (2014) suggest that audit should be used to ensure that 'what is *being* done *should* be done'. There are many different types of audit that may be run in your practice, depending on your previous experience of audit and the resources available to you (Table 3). Choose the type of audit that will be most suited to your practice, and spend some time planning how that audit will run. The publications discussed in this article provide good guidance on how to conduct audit in practice. For a very effective introductory audit in practice, start by simply looking at what you do using the audit cycle in Figure 1. Collect some data and hold a discussion and once you've identified if any changes need to be made, re-audit with your new targets and discuss the results again to see if you have made a difference.

Conclusion

Clinical audit can bring many different benefits to veterinary practice. However, there are disparities between how audit is defined and the processes involved in conducting audit according to some authors. The reasons for carrying out audit, whether for governance purposes or not, and the different types of audit that can be undertaken are likely to have an effect on how the literature on clinical audit is perceived. This can make understanding the clinical audit process challenging. Despite the controversies, clinical audit can be a valuable tool. Ultimately, attempting any form of clinical audit can be rewarding at an individual, or at

a practice level. Further work is required to determine how clinical audit can best be run in a variety of practice environments.

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