Clinical audit in farm animal veterinary practice.
Part 1: preparing for audit

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This article, the first in a two-part series providing practical advice for practitioners on carrying out clinical audits, discusses the preparation and initiation of clinical audit in farm animal practice. In the second article, to be published in a subsequent issue of In Practice, the stages of data collection, analysis and re-audit will be discussed along with some of the facilitators and barriers to conducting clinical audit. Both articles are based on findings from a three-year research project looking at the use of clinical audit in farm animal practice. The research included conducting audits using information already in existence in the practice setting, and audits focused on actively collecting information over a period of time in three farm animal practices, and a nationwide survey on the experiences and attitudes of farm animal veterinary surgeons towards clinical audit in the UK.

CLINICAL audit in the veterinary setting is the assessment and improvement of clinical services delivered by veterinary practices and practitioners. Essentially, it’s looking in detail at what you do and trying to make it better. Clinical audit is a continuous cycle that uses the best available evidence to improve the care delivered to patients (Fig 1).

Box 1 provides tips for conducting a clinical audit for the first time.

Preparing and initiating the clinical audit

Preparation is the key to success and time spent on this stage should increase the chance of conducting a useful and effective clinical audit.

Assign a lead

An individual within the team needs to take ownership of the clinical audit to drive it forward within the practice.

The lead can be any member of practice staff; veterinary assistant, office administrator, partner/director or veterinary nurse, and they may be a junior or senior member of staff. The lead position may be best suited to the person most enthused about the topic; therefore, it may be beneficial to have a different lead for different clinical audit topics. It is important to ensure that whoever is leading the process is allocated enough time to facilitate the clinical audit. The lead should oversee the entire process and ensure that it progresses, is completed and that results are fed back to the practice team. They should be in a position to motivate the team to carry out the clinical audit and ensure that new and returning staff

Box 1: Conducting a clinical audit for the first time

Keep it simple
Where very little information currently exists or is collected, the undertaking of a clinical audit that provides any data will be of interest. Start simply – how do different vets do different things across the practice? How many instances of a certain case do you see? How much of a certain product do you sell? Difficult topics can discourage future clinical audit activity.

Keep it short
Start with a short audit, regardless of whether you are using data already in existence within your practice, or whether you need to collect information going forwards. For example, your data collection forms should contain no more than 10 questions, and data should be collected for a short time (ie, less than three months) if feasible. Avoid long audits that can lead to audit fatigue. Communicate the results clearly to allow individuals to see the benefits.

Keep it interesting
Choose a topic that the majority of the team have an interest in. Show the benefits that can be gained from simple collection and analysis of data. Aim for success rather than trying to provide answers to too many complicated questions.
Clinical Audit

Fig 2: Possible examples of the different types of clinical audit that could be conducted arising from the decision to focus on the area of calf pneumonia.

**Structure audit:** Assesses facilities and equipment available. For example, does the practice have a laser measurer, smoke bombs, and Brix refractometer available for vets to conduct pneumonia investigations on farm? Can be a very simple type of audit to do but can bring huge benefits. It may highlight areas that suggest additional equipment is required.

**Process audit:** Looks at the process of how care is delivered. For example, how do we treat pneumonia and how do we help farmers prevent pneumonia? This can be done retrospectively (where the information exists), or prospectively be collecting data on farm when cases are seen. This gives an overview of how clinical care is carried out and could help to develop a uniformed approach to cases if required. NB how many variables may effect the processes of care that are delivered?

**Outcome audit:** Looks at the results of clinical practice and can be retrospective or prospective. For example, you might assess four week survival rate of calves treated for pneumonia. It allows the results of care to be noted and reviewed, but many factors can affect the outcomes of a case and the outcome may not be the most important part of the clinical care delivered.

**Significant event audit:** Conducted when a good or bad critical event has happened. For example, a calf dies while having a bronchoalveolar lavage sample collected. Why did this happen and how can it be prevented in the future? Or, a farmer that normally had very high mortality rates has greatly reduced it after one visit. How did this happen and how can it be repeated in the future? To be successful, significant event audits require the practice to have a no-blame culture.

**This is research:** For example, what is the best antibiotic to use for calf pneumonia? Do non-steroidal anti-inflammatory drugs improve survival rates? The information you want may already exist. If not, consider conducting a research project in practice, if appropriate to do so.

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members are aware of the clinical audit progress. The lead should be selected carefully when attempts are being made to run clinical audits for the first time so that the process is likely to be more successful.

**Engage all team members in the process**

It is important to establish who will make up the clinical audit team (Viner 2005) and who will be involved. This may include veterinary surgeons, veterinary nurses, office staff and visiting veterinary students. Because farm animal practitioners are often working in isolation and may have limited contact with others in the practice on a day-to-day basis, it is even more important that engagement occurs during the early stages of the audit. In practices where it is not possible for the whole team to do clinical audit, individuals may consider conducting clinical audits of their own activities.

**Ensure a no-blame culture from the start**

A no-blame culture is vital for successful clinical audits (Viner 2005, Viner and Jenner 2005, Oxtoby and others 2015). If practitioners don’t feel comfortable discussing and sharing experiences, then clinical audit will have little benefit; fundamentally, quality improvement should start at the level of improving communication within the practice team.

**Determine resources available**

Before conducting a clinical audit, the lead should find out what resources are available within the practice and investigate the capabilities of the individuals who will be involved. This may involve assessing who has time to dedicate to the process, the knowledge and experience levels of team members, and the capabilities of the practice management system (PMS) software or the availability of other data or information held by the practice.

**Create clear communication strategies**

Successful audit requires successful communication (Rayment 2002). Clinical audit can have huge benefits in relation to the encouragement and enhancement of communication within a practice (Yagi 2015). At the beginning of the process, establish the channels that are available within the practice and determine which ones will allow all team members to easily stay up to date (eg, via e-mails, memos, posters, PMS messages, notes in pigeon holes, WhatsApp groups, etc). It is important not to allow communication to become over-bearing or time consuming. The frequency of contact will depend on the length of the audit, the method of communication and the caseload seen.

**Choose a topic to audit**

It is important to choose a topic to audit based on the interests of the team. The topic you choose may be something that has a high caseload, carries a high risk or involves a high cost, or it may be the topic from a recently attended continuing professional development (CPD) course, the subject of a newly published paper, or an area you want to develop within the practice. Because farm animal clinicians are often working alone they are less likely to observe other vets, and so without regular
Clinical Audit

Plan:

- A retrospective case-control study looking at a population of animals to determine which treatment is best for a given condition

Methods:

- Review the clinical records for animals treated for the given condition over a set period of time

  - Detailed, repeatable methodology required
  - Thorough literature search to see what previous work exists
  - Sample size calculation to determine number of cases needed
  - Ethical approval needed
  - Detailed statistical analysis of results

Results:

- X clinical records found
- Y per cent treated with treatment A
- Z per cent treated with treatment B
- Treatment A led to recovery in an average of seven days
- Treatment B led to recovery in an average of four days

Conclusions:

- Treatment B leads to quicker recovery times for the given condition than treatment A.
- The study discussion may include how this is given condition than treatment A.
- Treatment B leads to quicker recovery times for the given condition than treatment A.
- Agreement with existing literature should be assessed
- Findings should be discussed within the practice and decisions made if any changes are necessary

Use of findings:

- Treatment B is better than treatment A. Assuming a robust study, the findings should be used as a reliable reference

In this practice, animals treated with treatment B appeared to recover more quickly than those given treatment A. Agreement with existing literature should be assessed.

Findings are relevant to the practice that conducted the audit. Results could be used as a benchmark for others but it must be remembered that they are from a clinical audit not research.

Fig 3: Example outlining the difference between research and clinical audit

practice communication it is possible that there may be variability in case approach and individuals may be, unknowingly, using very different techniques. Therefore, clinical audit discussions are important to highlight any areas of variability and the reasons behind these.

Meeting to decide the clinical audit topic

An initial meeting to discuss and choose the topic is likely to be beneficial and will kick start the process for the clinical audit lead. Staff involvement is crucial, so the meeting should be held at a time that suits as many of the team as possible, or provide a way for individuals to join remotely (eg, teleconference, Skype, Whatsapp). Where possible, it is best to hold meetings during working hours, but if the meeting is to be held at a time where staff will have to give up their free time then incentives (such as food and drink) should be provided to encourage them to come along and maximise engagement. The lead should ask everybody involved to suggest topics to audit before the meeting; this could be done via e-mail, Facebook (private group), Whatsapp or a suggestions box.

During the meeting, the group should brainstorm (Raymond 2002) from the original topics suggested to create more detailed choices if necessary. Fig 2 uses the broad topic of ‘calf pneumonia’ as an example to suggest the different types of specific clinical audit that could be conducted from this broad topic. Not all topics will be suitable for every type of audit and it is likely that some topic ideas will be rejected at this stage – try to cut down to less than five for a more detailed discussion. With the remaining five (or less) topic ideas, the discussion should focus on the advantages and disadvantages of each topic. Things to consider could include:

- Case load seen;
- The interest surrounding the case;
- How easy it will be to record, collect or find data;
- How useful the results may be.

It may be pertinent to consider how seasonality may affect data collection (eg, calf pneumonia, summer mastitis in cows; pregnancy toxemia in ewes); running the clinical audit during the busiest period may allow maximum cases to be collected over the shortest period of time. The final topic to audit should then be chosen after all individuals have had an opportunity to contribute.

The discussion should allow all stakeholders to have a say and voice their opinions. Any concerns raised about the clinical audit need to be acknowledged and addressed before the process begins to avoid subsequent issues. The audit lead should ensure that the meeting stays on track and that the clinical audit discussion does not stray into a clinical research discussion (what is the best way to do something) (Fig 3). After the meeting, communicate the findings to everybody that will be involved in the clinical audit, including those members of staff who were unable to attend, or those that got called away during the meeting.

Search the literature

Once the topic to audit has been chosen, the literature should be searched for any relevant evidence that may help you set a standard to work with, or that provides more information on any recent developments in the area about how things should be done. Literature searches should be thorough with the aim of finding any existing standards, consensus guidelines or discussion of current techniques used in relation to the topic. Any information found may be useful to your clinical audit (Raymond 2002). To quickly determine whether evidence exists on a topic, an initial search for existing structured reviews of the literature should be carried out first (Box 2).

For primary searching, Grindlay and others [2012] recommends searching Medline (PubMed) and CAB Abstracts for the best coverage of veterinary journals. Finding references through relevant article citations or via Google Scholar may also yield results. An online evidence-based veterinary medicine (EBVM) website has further details on how to search the literature [http://www.ebvmlearning.org]. Box 3 details ways you may be able to access literature resources.

Setting a standard

Traditionally, clinical audit compares what happens in practice against a set, evidence-based standard. However, this is not always possible in veterinary medicine where evidence is often lacking. There are a few approaches you can take, depending on the information that you find on your topic. For more detail in relation to this, readers are referred to Table 2 in Waine and Brennan (2015). If you have identified existing consensus guidelines you may want to use them as your standard to compare your current practises to, or use them to make your own
practice guidelines. For example, Wapenaar and others (2011) published evidence-based guidelines on the management of uterine prolapse in cattle. You could:

- Compare what you currently do in your practice to the guideline;
- Implement the guideline in your practice and then compare how well they were followed by the team;
- Use the consensus guideline to create your own practice guideline if you would like all vets to take a similar approach to managing uterine prolapses.

You may have found previous literature that could be useful to compare your practice to. For example, if you are undertaking an outcome audit looking at the survival of cows after surgery for a left displaced abomasum, then the findings published by Pedersen (2006) could be used as a comparison. The use of studies in this way must be approached with caution, as certain aspects regarding how studies have been designed may mean direct comparison is difficult. If possible, a quality assessment of any literature found should be carried out first. There are bespoke tools available to help vets make judgements on study quality; see Dean (2013) for further details.

You may not have found any relevant peer-reviewed evidence that relates to your clinical audit topic. If this is the case then you could discuss the topic with the practice team and set your own benchmark to aim for. For example, perhaps the team decides that they would like 80 per cent of caesareans to receive a post-op check within 48 hours. Alternatively, you could conduct the first round of the clinical audit to determine current activities and performance, and then use the findings as a future basis to audit against.

**Research v audit: ethical considerations**

It is important to ensure that the clinical audit you want to do is not actually research. There can be a fine line between clinical audit and clinical research; research determines the right thing to do, while audit looks at what is being done (Smith 1992, Wylie 2015). Clinical audit should be no more than normal clinical management (Viner 2009) and not the identification of which approaches or treatments are the most efficacious. There are some features that are very clearly only applicable to clinical research: interventions using completely new treatments, an absolute requirement for ethical approval, and a clearly defined methodology with repeatable results. However, this does not mean that ethical considerations should not be identified for clinical audits. Ensure methods maintain client confidentiality and meet the requirements of the Data Protection Act (1998) or the new General Data Protection Regulation (GDPR) (Read 2018).

Some types of research studies, such as randomised controlled trials, are very clearly not clinical audit, but other types of research, such as retrospective case-control studies or a case series, may be harder to distinguish.

Dunn (2012) argues that the purpose of clinical audit is not to create new knowledge. However, when clinical audit is conducted and reported in an area where there is no existing new knowledge, may be created. This may be where some of the confusion lies. Fig 3 shows a simplified example of how a research study and a clinical audit could ultimately produce the same data. Although the same data may be collected, the key difference between the two is how the process is approached and how the results are interpreted and used. New knowledge may be created from clinical audit, but it must be interpreted with care as clinical audit data are unlikely to be as robust as those generated from a well-conducted research project.

The distinction and intention of a project should be clear from the outset as the process between research and clinical audit does differ. If work is appropriately labelled and understood, the findings can be correctly interpreted for quality and subsequently used. This means clinical audit findings could be used as a reference for other work or used as a benchmark by others. However, this must be considered before you conduct your clinical audit. Ethical consideration must be undertaken if you plan to share data outside of your practice, or if you plan to publish your clinical audit on your website, in a newsletter or in a publication. When clinical audits are published, publishing formats should ensure that the clinical audits are clearly described as such, and are not moulded into a research template which may lead to confusion.

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**Box 2: Evidence summaries**

There are a number of existing resources highlighting reviews of the literature that have already been conducted:

- BestBETS for Vets (www.bestbetsforvets.org)
- RCVS Knowledge: Knowledge summaries (www.veterinaryevidence.org/index.php/ev)
- VetSRev – Database of veterinary systematic reviews (http://webapps.nottingham.ac.uk/refbase/)
- Equine Veterinary Education: Clinical evidence in equine practice (https://onlinelibrary.wiley.com/page/journal/20423306/homepage/clinical_evidence_in_equine_practice_online_collection.html)

**Box 3: Accessing the literature**

There are a number of different ways that the literature can be accessed:

- Some articles are open access and therefore can be freely obtained.
- Individuals applying towards certificates or diplomas may have access to journals through the university they are enrolled with.
- You can join the RCVS Knowledge Library for an annual membership fee (£125/year for veterinary surgeons, £70/year for veterinary nurses up to two years qualified, or £50/year for veterinary nurses at the time of writing) which provides access to a wide range of full text electronic journals and VetMed Resource.
- VetMed Resource (www.cabi.org/vetmedresource)
- Local libraries sometimes have access to scientific journals
- In the UK, members of the British Veterinary Association have access to Vet Record and In Practice; members of the British Cattle Veterinary Association have access to Cattle Practice; members of the British Equine Veterinary Association have access to the Equine Veterinary Journal and Equine Veterinary Education journals; and members of the British Small Animal Veterinary Association have access to VetMed Resource (see above) as part of their membership.
Conclusion

For the best chance of conducting a useful and successful clinical audit, adequate time should be spent on preparation. This will help the rest of the process to progress smoothly and increase the chances of the clinical audit being beneficial to all involved.

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