

Clinical Audit Case Example: Anaesthesia Audit by Louise Northway

Section A: The eight stages of a clinical audit using an anaesthesia example.

Clinical audit is a process for monitoring standards of clinical care to see if it is being carried out in the best way possible, known as best practice.

Clinical audit can be described as a systematic cycle. It involves measuring care against specific criteria, taking action to improve it, if necessary, and monitoring the process to sustain improvement. As the process continues, an even higher level of quality is achieved.

What the clinical audit process is used for

A clinical audit is a measurement process, a starting point for implementing change. It is not a one-off task, but one that is repeated regularly to ensure on-going engagement and a high-standard of care.

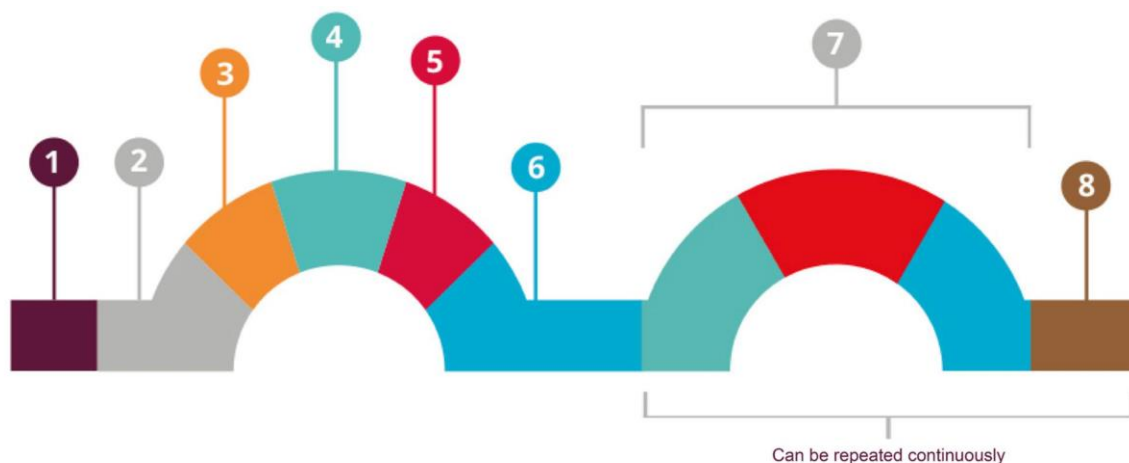
It is used:

- ⇒ To check that clinical care meets defined quality standards.
- ⇒ To monitor the changes made to ensure that they are bringing about improvements and to address any shortfalls.

A clinical audit ensures concordance with specific clinical standards and best practice, driving improvements in clinical care. It is the core activity in the implementation of quality improvement.

A clinical audit may be needed because other processes point to areas of concern that require more detailed investigation.

A clinical audit facilitates a detailed collection of data for a robust and repeatable recollection of data at a later stage. This is indicated on the diagram where in the 2nd process we can see steps 4, 5 and 6 repeated. The next page will take you through the steps the practice took to put this into practise.



1. Choose a topic relevant to your practice

The topic should be amenable to measurement, commonly encountered and with room for improvement. In this case the practice undertook an audit of patients undergoing anaesthesia, which covered a range of criteria including pre-medication, post-operative temperatures and IV catheter placement. The audit was led by Louise Northway RVN.

2. Selection of criteria

Criteria should be easily understood and measured. For this audit quantitative data was gathered and transferred to an excel spreadsheet for accurate measurement. Data included the clinical parameters of the patient, the medication the patient had received pre and peri-operatively and the IVC status of the patient.

3. Set a target

Targets should be set using available evidence and agreeing best practice. The first audit will often be an information gathering exercise, however targets should be discussed and set. This audit was performed to obtain information on the current standard (benchmark) of the practice. This information would also be used to identify any training requirements within the practice.

4. Collect data

Identify who needs to collect what data, in what form and how. To collect data a number of veterinary nurses were recording information on a spreadsheet once they had handed the patient over to the kennel nurse. This ensured that data was recorded regularly and accurately.

5. Analyse

Was the standard met? Compare the data with the agreed target and/or benchmarked data if it is available. Note any reasons why targets were not met. These may be varying reasons and can take discussion from the entire team to identify. The audit results and the discussion around them identified that lack of equipment, unexpected difficulties and absence of a distributed protocol all contributed to the overall outcomes.

6. Implement change

What change or intervention will assist in the target being met? Develop an action plan: what has to be done, how and when? Set a time to re-audit. Analysis showed that a number of new protocols needed to be put in place and distributed to all team members to increase their knowledge and understanding. The results also identified a requirement for further monitoring equipment, and this was ordered. Regular in-house training has also been provided to all team members.

7. Re-audit

Repeat steps 4 and 5 to see if changes in step 6 made a difference. If no beneficial change has been observed then implement a new change and repeat the cycle. This cycle can be repeated continuously if needed. Even if the target is not met, the result can be compared with the previous results to see if there is an improvement. The audit was repeated after initial changes were implemented to monitor for improvements. Louise performs spot checks on a daily basis to ensure that monitoring equipment is being used during surgery and patients are normothermic post-surgery. Another audit is due in the next few months.

8. Review and reflect

Share your findings and compare your data with other relevant results. This can help to improve compliance. Findings and updates to protocols are regularly given to the veterinary team by Louise.

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Section B: Clinical audit in practice, using an anaesthesia example

Name of initiative:	Anaesthesia audit of a large first opinion practice
Initiative start date:	September 2017
Submitted by:	Louise Northway VNCert(ECC) Ncert(Anaesth) RVN Clinical Nurse Lead

Introduction

This QI initiative took place in a busy, independent, general practice. The anaesthesia audit took place over 4 weeks during September and October 2017 and involved a sample size of 50 dogs and 25 cats undergoing general anaesthesia. More patients were anaesthetised than this number however were excluded from this audit due to incomplete data.

The audit was undertaken as surveillance to assess how well we were currently doing in practice and to see if we needed to review and adapt the way we were doing things. Procedures varied from routine surgery to emergencies and patients American Society of Anaesthesiologists (ASA) 1 (healthy) to ASA 5 (moribund, very unwell).

Aims

The aim of the audit was to provide evidence for positive change in regards to current drug protocols, patient monitoring and over all patient management. It was undertaken as surveillance looking for any trends and complications so that changes could be made to enhance patient care.

Actions

In our audit we reviewed;

- The age of patients undergoing anaesthesia in our clinic
- The % of animals in each ASA score anaesthetized
- What % of each type of procedures were being performed
- % of patients that had IV catheters placed
- % of animals that had advanced monitoring equipment used
- % of patients with post-operative temperatures in the ranges of normo, hypo and hyperthermic
- % of patients who had their blood pressure monitored
- % of patients who were normotensive, hypotensive or hypertensive
- % of patients which had each type of premedication
- % of patients which had X anaesthetic induction agent
- % of patients that had X inhalation maintenance used
- % of patients that required rescue analgesia
- % of patients that had X ml/kg used for intravenous fluid therapy

And finally nurses were asked to 'score' the following;

- Induction quality
- Maintenance quality

Data was collected by nurses writing the above information onto a (very large!) spreadsheet in our prep room once they had handed their patient over to the kennel nurse. This information was then transferred to a excel document.

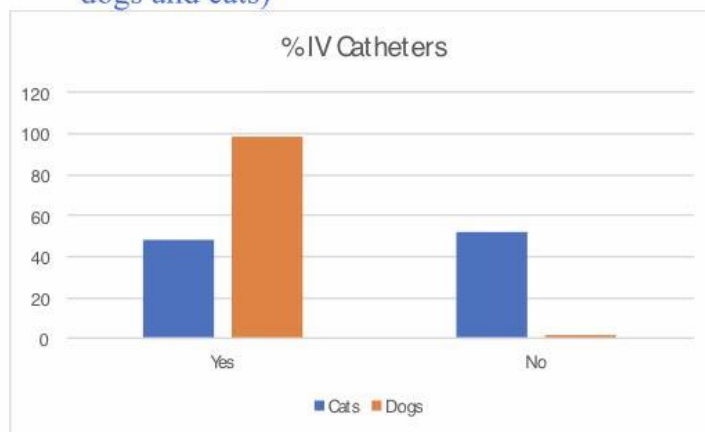
What were the findings?

From the audit there were many very interesting findings. Here are some of the key points;

IV catheterisation:

At the time of this audit only 40% of our feline patients were having an IV catheter placed; far lower compared to our canine patients where 96% of dogs had IV catheters placed.

5) % of patients that had IV catheters placed (Separate for dogs and cats)



We reviewed and discussed the reasons why. At our practice we perform a high proportion of routine ASA 1 feline neutering using IM general anaesthesia combinations - so it was, perhaps, that an IV catheter was not required for induction of anaesthesia. Aside from total intravenous anaesthesia, cannulas are not required for the

maintenance of anaesthesia. However this was not good practice in case of an emergency or if intravenous fluids were required. ASA 2 patients and above did routinely have IV catheters placed. The cost of IV catheters was discussed and we agreed it was minimal and should not impact the decision to place one if it is in the best interest of the patient. We spoke about the Confidential Enquiry into Perioperative Small Animal Fatalities (CEPSAF) study (Brodbelt, et al., 2008) which found that healthy cats are at far higher risk (1:895) compared to healthy dogs (1:1849) of death in the perioperative period. A healthy cat is twice as likely to have an anaesthetic related complication compared to a dog. Taking this into consideration, alongside the other factors revealed in this audit, encouraged us to change our current policy.

At our practice it is now standard procedure that ALL patients undergoing general anaesthesia have an intravenous catheter placed.

Blood Pressure:

Another finding from the audit was that only 40% of cats and 70% of dogs had their blood pressure monitored under anaesthesia. Of those who did have their blood pressure monitored hypotension was encountered frequently in our feline patients for some, or all of their procedures.

We discussed and reviewed all of the contributory factors for hypotension. Pre-med combinations which may negatively influence systemic vascular resistance were considered. Of those patients who had their blood pressure monitored the audit highlighted that a large proportion of cats were hypotensive for a period of their anaesthetic. This highlighted the very real possibility that many patients without additional monitoring may have also been hypotensive.

At the time of this audit, we had limited monitoring equipment available and had to share and prioritise who had what. This helped us push our practice to purchase more monitoring equipment to enable better monitoring of blood pressure, for every patient, every time. This audit proved it was a NEED – not just a want.

Alongside reviewing and changing drug choices, we reviewed fluid therapy rate and other factors which influence hypotension such as hypothermia. Were we taking enough steps to prevent this downward spiral of events? When these changes in protocols occurred the team were given a revised SOP and training was provided (in house CPD lecture) to explain why changes in drug choices, doses and patient management had been made.

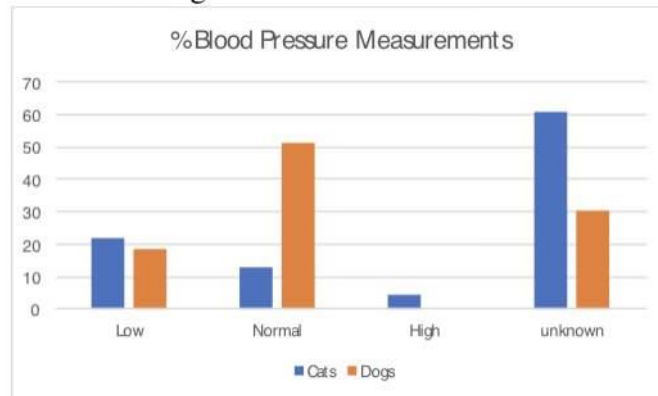
Hypothermia:

The audit found that the large majority of patients returned to kennels with a post-operative temperature of 37°C or above.

In a recent article by Feller, 2018 it states that hypothermia is classified as mild (>36.6°C), moderate (35.5°C-36.5°C), severe (33.3°C- 35.4°C) or critical (<33°C). The majority of our patients were normothermic to mildly hypothermic on recovery. We felt this was good but there was definitely room for improvement.

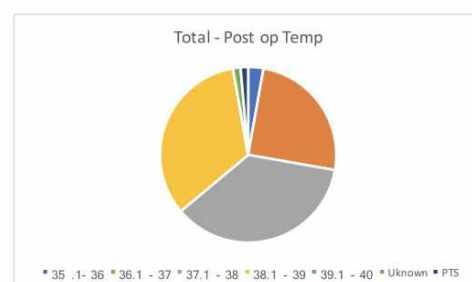
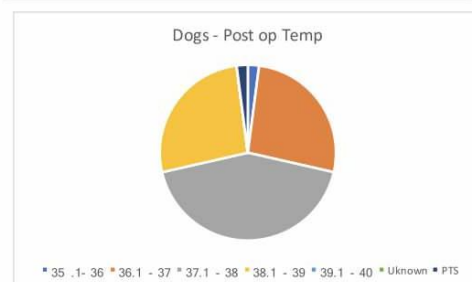
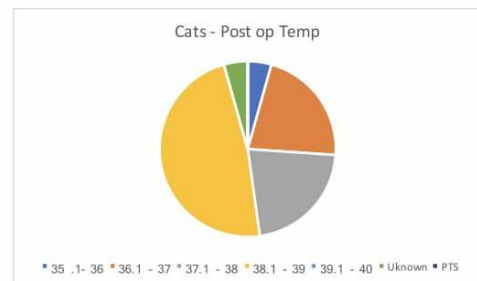
1. Blood pressure measurements (separate for dogs and cats)

- 1 - low
- 2 - normal
- 3 - high



12) Pie chart of post op temperatures in the range;

- 35-36°C
- 36-37°C
- 37-38°C
- 38-39°C
- 39-40°C



We discussed and enforced new protocols to ensure patients were warmed straight from premedication. The young, small, sick or old were prioritised to have the active warming systems, the larger dogs were insulated with bubble warm, foil blankets and other passive warming devices. Our team are now more vigilant and on the ball for hypothermia – it does take a collective effort from the start to keep patients warm.

Analgesia:

The audit looked at how many animals undergoing surgery required rescue analgesia. This is 'top up' analgesia when the current on board analgesia does not appear to be sufficient. **The audit found that a higher percentage of canine patient's required additional analgesia compared to only 4% of cats.**

We reviewed our current protocols and compared them to up to date literature recommending the use of local anaesthesia as part of a multimodal

analgesic approach such as the revised American Association of Feline Practitioners guidelines (Robertson, et al., 2018 & Lascelles & Shaw, 2016). One of the key changes was the utilisation and implementation of local anaesthesia where possible – especially in dental and neutering procedures.

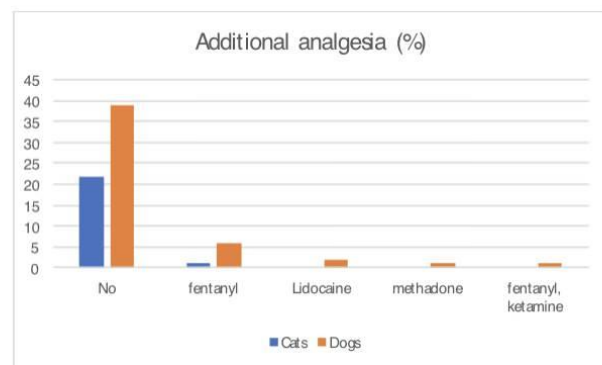
When a patient's nervous system is responding to noxious surgical stimuli under anaesthesia, there is the potential to cause anaesthetic overdose if you attempt to 'dampen' the response by using the volatile inhalation agents. If they look clinically anaesthetised – they are! They require more analgesia, not more anaesthesia. Turning up the volatile agent will be detrimental to the patient. This may result in cardiovascular depression and vasodilation. In turn this will cause a huge drop in blood pressure and overall oxygen delivery to tissues. This is why following my anaesthesia certificate I wanted to make positive change in regards to implementing a multimodal, pre-emptive analgesic approach for our patients. By providing multimodal analgesia, we should be able to use less volatile agent, which will help support blood pressure and prevent other associated undesirable side effects. Equally, if we plan our premedication and analgesic techniques well, we shouldn't need to reach for the 'rescue' analgesia in the first place (or as frequently!).

Using local anaesthesia has had a very positive impact. More recently we have transitioned to using pure μ agonists (such as methadone) for our routine, elective bitch ovariohysterectomies in line with up to date evidence (Shah, et al., 2018). At this time we also changed from using butorphanol to buprenorphine in our elective feline neutering following the evidence provided by Warne Et al, 2014.

It is worth mentioning here that as an RVN I am not allowed to prescribe or administer a drug unless under the direction of a Veterinary Surgeon however I feel it is very important for nurses to be aware of the wider picture in order to be able to trouble shoot appropriately and support their vet team.

8. Additional analgesia given (dogs)

9. Additional analgesia given (cats)



Results

The results of this audit were communicated to the team (vets and nurses) via a written report. It was then discussed during clinical rounds. Since, I have provided regular, in house anaesthesia training for the team in relation to up to date evidence and new published guidelines. In addition I have also updated our clinical forms to include recommended resources like checklists to improve patient safety.

Impact of intervention

The impact of this intervention is that clinical standards and patient care has greatly improved since we started auditing and monitoring what we are doing. From doing this comprehensive audit we made key changes in our day-to-day approach to anaesthetising our patients and clinical outcomes. I feel our standards used to be 'average' - now they are much better!

We often have multiple vets performing surgery and multiple nurses monitoring anaesthesia at the same time, so it isn't until you start looking back at monitoring sheets at the frequency of complications (even if minor!) that you see that it might actually be a recurring theme.

The increased awareness of complications revealed by the audit was very interesting and in conjunction with the further training that has been provided, we are all doing a much better job. The audit helped to flag up other things we could improve.

Sometimes it's only when you stop and look at all the 'little' complications you see each day that you realise actually it's a much bigger problem which needs reviewing and addressing.

You have to accept that nothing you do is 'perfect' and there is ALWAYS room for improvement, which is what quality improvement is all about.

Even if it's good, you can make it EVEN BETTER!

To conclude, I'm sure many of you sitting reading this case example are thinking 'I wonder how my practice is doing?' Why don't you do an audit and see!

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