Propofol Wastage Audit

RCVS Knowledge Quality Improvement Award: QI in Practice Champion 2026

Name of practice: Medivet

Introduction

Our project aimed to reduce environmental and clinical wastage of propofol by auditing usage across four networks within our organisation. A retrospective baseline audit identified high levels of propofol drawn up for anaesthetic induction was left unused. Evidence showed that excessive draw-up volumes not only increase environmental impact but may also compromise patient safety by encouraging larger-than-required doses and reducing the precision of titration to effect. Following a literature review, each division implemented tailored interventions, including reduced draw-up volumes, improved pre-medication choices, and slower IV administration. Following implementation, propofol wastage decreased by 15.6% overall, demonstrating that simple, standardised practice changes can significantly improve sustainability and anaesthetic efficiency.

1. Choose a topic relevant to your practice

The topic should be amenable to measurement, commonly encountered and with room for improvement.

a. What topic was chosen?

The reduction of propofol wastage during anaesthetic induction across multiple networks within our organisation.

b. Why was this topic chosen?

Propofol wastage was selected due to concerns about environmental impact, resource inefficiency, and implications for patient safety. Baseline data showed high volumes of unused propofol being drawn up, creating avoidable waste and risk of dosing inaccuracies. Emerging evidence highlights the environmental burden associated with propofol production and disposal, making this an important target for sustainable practice. Reducing wastage also supports safer, more consistent anaesthetic delivery.

2. Selection of criteria

Criteria should be easily understood and measured.

a. What criteria was used?

The primary audit criterion was the percentage of propofol wasted per millilitre drawn up, allowing direct comparison before and after interventions. Additional criteria included accurate documentation on GA forms, appropriate draw-up volumes aligned with recommended dosing strategies, and whether propofol was prepared only once the patient and procedure were confirmed. These criteria enabled evaluation of both quantitative improvements and adherence to best practice behaviours.

3. Set a target

Targets should be set using available evidence and agreeing best practices. The first audit will often be an information-gathering exercise, however, targets should be discussed and set.

a. What target was set?

A target of maintaining wastage to below 10–15% was set for the re-audit period. This aimed to achieve a meaningful and measurable reduction across all networks while maintaining safe anaesthetic delivery.

b. What evidence was used to define the target?

The target was informed by baseline audit data showing unnecessarily high draw-up volumes and consistent patterns of unused propofol across networks. This was used alongside reviewing the published evidence, supporting the development of a realistic and achievable reduction target aligned with both sustainability and patient safety priorities.

4. Collect data

Identify who needs to collect what data, in what form and how.

a. When was the data collected?

Cycle 1- Data was collected to cover June until 1 August 2025.

b. What data was collected?

Data included the volume of propofol drawn up and the volume administered for each general anaesthetic procedure, allowing calculation of percentage wastage. General anaesthesia (GA) forms were also reviewed to assess documentation completeness and adherence to recommended practices such as draw-up timing and dosing strategies. This enabled comparison with baseline findings and evaluation of intervention impact.

c. Who collected the data?

Data was collected by members of the clinical teams within each division who were responsible for reviewing GA records. Divisional Veterinary Directors coordinated the process, ensuring consistency in data extraction and adherence to the agreed audit criteria.

d. How was the data collected?

Data was gathered retrospectively from completed GA forms across participating practices. Standardised data collection sheets were used to record propofol volumes drawn up and given, as well as relevant procedural information. Practices submitted weekly samples of five GA forms, which enabled ongoing monitoring of compliance and facilitated reliable comparison with baseline data.

e. Results:

Cycle 1 data:

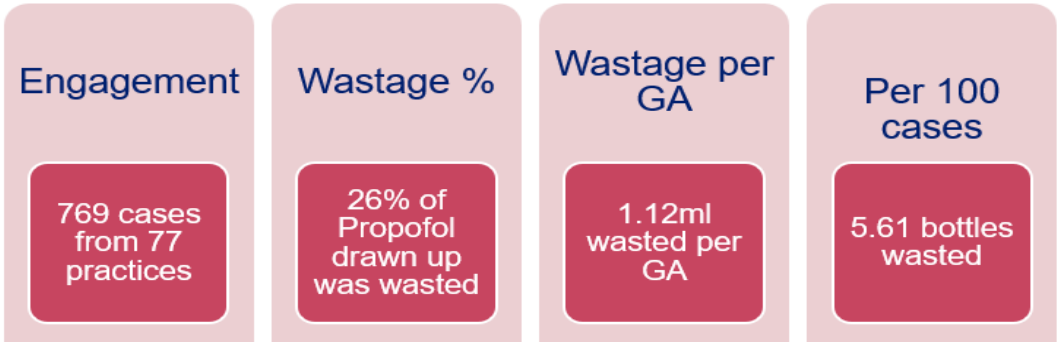

Figure 1: Infographic demonstrating the volume of propofol wastage observed in the baseline data.

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 the discussion from the entire team to identify.

c. Was the target met, if not, why not?

This collection of baseline data demonstrated that 26% of drawn up propofol was wasted. This was significantly above the target of 10-15% wastage. The high wastage seen in cycle 1 reflects a combination of routine over-drawing of propofol, variation in anaesthetic and pre-medication practices, and preparation of drugs before procedure confirmation. Lack of standardised guidance and limited awareness of environmental and clinical implications also contributed.

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.

a. What changes were introduced?

Each division introduced evidence-based changes to reduce unnecessary propofol draw-up volumes, including:

- Starting doses of 1–2 mg/kg or 50% of the calculated requirement
- Preparing propofol only once the patient and procedure were confirmed

- Administering propofol slowly via the intravenous route
- Reviewing pre-medication choices and considering α2-agonist premedication where appropriate
- Educational posters and guidelines were distributed to support implementation
- Team discussions and weekly checks of general anaesthetic records helped ensure accurate recording and supported consistency in adopting the changes.

b. What was the overall action plan?

The action plan involved standardising anaesthetic preparation practices across networks, increasing awareness of wastage, and reinforcing safe, sustainable drug use. Weekly auditing of five GA forms in each practice supported continuous monitoring and accountability. Team discussions and practice meetings ensured interventions were understood, adopted, and adapted to local workflows.

c. When was a re-audit planned?

Cycle 2 - A re-audit was planned for three months after implementation, starting in October 2025. This data collection phase included reviewing data from the beginning of August after changes were first implemented.

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 them 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.

a. When did the re-audit take place?

The second cycle was conducted as planned between 1 August and 31 October 2025, following promptly after the first cycle.

b. What data was collected for the re-audit?

For the re-audit, data was collected on the volume of propofol drawn up versus the volume administered for each general anaesthetic procedure, allowing calculation of percentage wastage. GA forms were also reviewed for completeness and compliance with the new protocols, including use of reduced draw-up volumes and appropriate titration practices. This enabled direct comparison with baseline performance.

c. Who collected the data?

Clinical team members within each participating division collected the data, following guidance provided by audit leads. Audit coordinators oversaw consistency in data extraction.

d. How was the data collected?

Data was collected rom completed GA forms using standardised audit sheets to ensure uniform recording of drawn-up and administered volumes. Each practice submitted five GA forms per week, enabling regular monitoring across the three-month audit period. This structured approach allowed reliable assessment of adherence to the implemented interventions and the overall impact on wastage reduction.

e. Results:

The data collected post-intervention shows a 15.6% reduction in Propofol wastage overall.

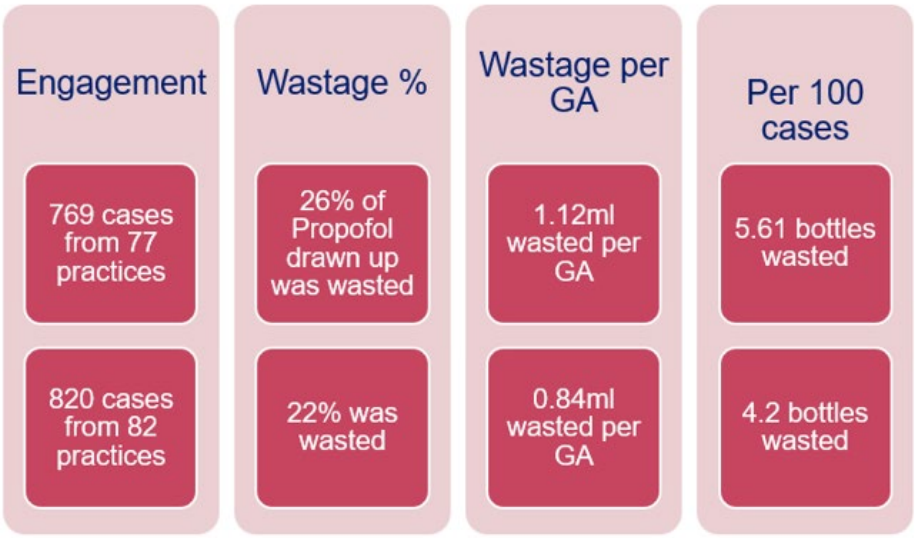

Figure 2: Infographic comparing propofol wastage between baseline and re-audit data.

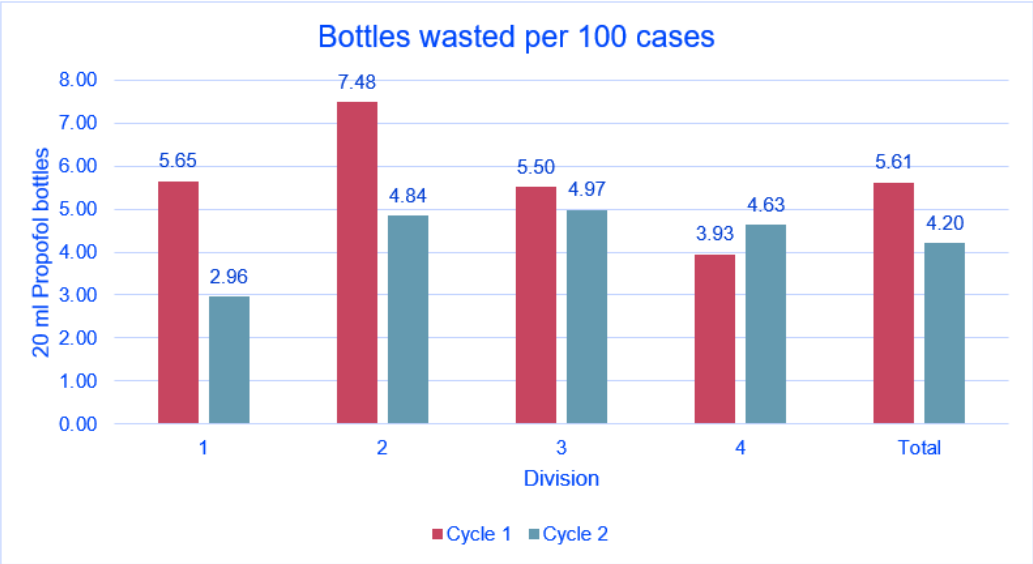

Figure 3: Graph displaying the reduction of wasted propofol bottles per 100 cases across the division, comparing cycle 1 and cycle 2 data.

f. Was the target met, if not, why not?

No, the target was not fully met, as we did not achieve an overall 10–15% propofol wastage, but instead achieved a 10–15% reduction from the baseline figure. Some reluctance to reduce initial draw-up volumes likely contributed to this, as clinicians often feel safer preparing the full calculated dose to avoid delays, maintain control during induction, or prevent interruption in compromised patients. Established habits and variation in confidence with titration-to-effect may also have influenced adherence.

However, the measurable reduction achieved across networks demonstrates that meaningful improvement is possible, and that further standardisation and guidance can continue to drive wastage down towards the original target range.

g. Were any further changes implemented?

Yes. At the time of writing, the Clinical Board had reviewed the re-audit findings and approved the development of formal guidance based on the intervention documents. This guidance will be rolled out across all networks to standardise propofol preparation and administration practices, ensuring ongoing waste reduction, improved consistency, and sustained patient safety benefits.

8. Review and reflect

Share your findings and compare your data with other relevant results. This can help to improve compliance.

a. At what stages were the team involved?

Teams across all netwroks were involved from the suggestion of the topic itself, the initial baseline audit through to the development and implementation of interventions, and again during the re-audit phase. They contributed to discussing results, trialling changes, and providing feedback to refine the process.

b. How were the team involved?

Team members participated by suggesting the topic and suggested targets, completing GA documentation accurately, trialling reduced draw-up volumes, reviewing premedication choices, and adopting slower IV administration techniques. They also engaged in practice meetings to discuss findings, share experiences, and support consistent application of the new protocols across sites.

c. Did the team need any support? How was this given?

Yes. Support was provided through clear written guidance, educational posters, and regular communication from Divisional Veterinary Directors. Practice meetings offered a forum for questions and troubleshooting, while weekly GA form checks helped reinforce expectations and identify any areas requiring additional guidance or clarification.

d. What barriers did the project face, and how were they overcome?

A key barrier was clinicians' reluctance to reduce initial propofol draw-up volumes due to concerns about patient safety, workflow disruption, or running out mid-induction. This was addressed through education, evidence sharing, and clear guidance demonstrating the safety of titration-to-effect. Variation in documentation also posed challenges, which were mitigated through weekly GA form checks and reinforcement of recording standards.

a. What was the impact of the project?

The project achieved a 15.6% reduction in propofol wastage, demonstrating that meaningful improvements in sustainability and clinical efficiency are achievable. It increased awareness of drug stewardship, promoted safer anaesthetic practices, and strengthened engagement with

Quality Improvement across netwroks. The work also generated new insight to inform future organisational policy and guidance.

b. What surprised you about this audit?

We were surprised by the high baseline wastage - significantly above the target range - which highlighted how routine habits can drive unnecessary over-preparation. It was also surprising how quickly teams adapted to reduced draw-up volumes once clear, evidence-based guidance was introduced, demonstrating strong willingness to change when supported appropriately

c. If this audit was done again, what would be done differently?

Future audits would include earlier and more structured education on titration techniques and the environmental impact of propofol to support behavioural change from the outset. We would also standardise documentation tools across all networks to improve data consistency and consider collecting a larger sample size to better capture practice variation.

d. How and where were results shared?

Results were shared with practice teams through meetings, internal communications, and feedback sessions within each division. Findings were also presented to the Clinical Board, which led to commissioning national guidance based on the interventions. The project is intended for wider dissemination to support organisational sustainability and promote shared learning.

e. What consideration has been given for Human Factors?

Human Factors were carefully considered throughout the project to ensure changes supported workflow and did not increase cognitive load for teams. Interventions were designed to integrate smoothly into existing processes without disrupting safety or efficiency.

Several changes were deliberately designed with Human Factors in mind to support safer, more efficient workflows. Standardising reduced propofol draw-up volumes simplified decision-making and reduced variation between clinicians, lowering cognitive load during induction. Introducing a clear guideline and visual posters improved shared understanding across teams and minimised miscommunication. The requirement to draw up propofol only once the patient and procedure were confirmed reduced time pressure, prevented unnecessary preparation, and supported situational awareness. Encouraging slow IV administration

promoted safer titration-to-effect, helping clinicians feel more confident when using smaller volumes. These changes led to more consistent practice, improved team communication, and a measurable reduction in propofol wastage, while maintaining staff confidence and patient safety.

Summary

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.

A 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 ongoing 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 practices, 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 wherein 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 practice.

Figure 4: The Veterinary Clinical Audit Cycle by RCVS Knowledge.

References

1. Jessen, L.R. et al. (2024) European Network for Optimization of Veterinary Antimicrobial Therapy (ENOVAT) guidelines for antimicrobial use in canine acute diarrhoea. *The Veterinary Journal*, 307, no. 106208. https://doi.org/10.1016/j.tvjl.2024.106208

2. Tang, M.S.S. et al. (2023) Evaluation of propofol wastage and disposal in routine anesthesia care. *Anaesthesia and Intensive Care*, 51 (2), pp. 152-154. https://doi.org/10.1177/0310057X221121832

3. Elsom, J. (2024) Propofol wastage in anaesthesia: implications and environmental outcomes. *The Veterinary Nurse*, 15 (1), pp. 30-34. https://doi.org/10.12968/vetn.2024.15.1.30

4. National Center for Biotechnology Information. *PubChem Compound Summary for CID 4943, Propofol. 11.1.15 Human toxicity excerpts* [PubChem Compound: Propofol] [online]. Available from: https://pubchem.ncbi.nlm.nih.gov/compound/propofol#section=Human-Toxicity-Excerpts [Accessed 26 June 2026]

5. Wamaitha, M.N., Mogoa, E.M. and Mande, J.D. (2019) Evaluation of anesthesia produced by ketofol in acepromazine- or medetomidine-sedated dogs. *Journal of Advanced Veterinary and Animal Research*, 6 (2), pp. 215-221. http://doi.org/10.5455/javar.2019.f335

6. Raillard, M. et al. (2018) Effect of predosing versus slow administration of propofol on the dose required for aneasthetic induction and on physiologic variables in healthy dogs. *Veterinary Anaesthesia and Analgesia*, 45 (4), pp. 414-422. https://doi.org/10.1016/j.vaa.2018.02.004