

Cefovecin Project: A Clinical Audit

RCVS Knowledge Antimicrobial Stewardship Award Champion 2024

CVS South 4 Region

Introduction

One of the key aims of CVS UK Ltd practices nationally is to take our responsibility as vets seriously, and that includes efforts regarding antimicrobial stewardship (AMS). CVS collects a range of data via the practice management system for all practices each month which is displayed on a dashboard for practice leaders to view. One of the datasets collected for AMS includes the number of prescriptions for both systemic and topical highest-priority critically important antibiotics (HPCIA) being issued versus the number of appointments undertaken. This allows practices to benchmark their use of HPCIA against other practices regionally and nationally.

The South 4 region is one of 18 CVS regions nationally and consists of nine small animal practice groups spread across Hampshire, West Sussex and the Isle of Wight. Representatives from these practices, as well as the neighbouring South 5 region, are invited to a regular Regional Clinical Meeting, held every six to eight weeks, to discuss pressing clinical concerns and share ideas for improving clinical care. The World Antimicrobial Awareness Week was due to be held on the 18th to 24th of November 2023 and a Regional Clinical Meeting was due to be held on the 10th of November, with the theme of AMS. This provided an opportunity to improve systemic HPCIA use across the region as an AMS Quality Improvement (QI) initiative.

Aims of the clinical audit

The Regional Clinical Meeting therefore served as a useful platform to shine a spotlight on this issue and to launch the project. Following data collection and analysis to establish the benchmark, the aim was to reduce the prescribing of systemic HPCIA for the South 4 region to less than 0.25% of consultations each month through a campaign to reduce unnecessary use of cefovecin without justification from culture and sensitivity (C&S) testing.

Actions

In preparation for this meeting, an audit of the region's AMS performance was undertaken to inform and discuss opportunities for improvement. The AMS data for systemic HPCIA use in

South 4 was mostly static over the preceding six months averaging about 0.8% each month. However, two outlier practices within the region were averaging closer to 0.3% per month.

Further investigation of the data from the region showed that only a minority of the systemic HPCIA use was due to the appropriate prescribing of fluoroquinolones in exotic species or when indicated after C&S testing. Whereas the majority of use (more than half the total) was due to cefovecin injections administered to cats suffering from bite wound abscesses and other superficial skin infections.

Although licenced for this use, there is no evidence to support the prescribing of any antibiotics to treat systemically well cats with infected skin wounds. Instead, if antibiotics are to be prescribed to systemically unwell patients, the BSAVA PROTECT-ME¹ poster recommends the use of broad-spectrum first-line antibiotics, not cefovecin which is a third-generation cephalosporin and is considered an HPCIA due to its use in treating bacteraemia and sepsis in humans.

The Plan, Prevent, Protect framework was used to help identify the underlying issues and barriers to change, as well as the actions that could be taken to drive improvement. These were:

- PLAN – The barriers were identified as a belief that because abscesses are an infection they need to be treated with systemic antibiotics, that oral antibiotic administration compliance is poor among cat owners, and that cefovecin provides a full course of antibiotics from a single injection which improves compliance.
- PREVENT – To identify opportunities to discourage the use of cefovecin and encourage the use of other treatment options
- PROTECT – To reserve cefovecin use for cases with clear clinical indication and a recommendation from the laboratory based on a culture and sensitivity test result thereby reducing opportunities for antimicrobial resistance to develop.

At the project launch, a range of CPD resources was combined into an email campaign that was sent to all the vets in all the participating practices to inspire and encourage discussion regarding the use of cefovecin in practice. These can be found in Annex 1.

The following QI methods and tools were also used to encourage improvement:

- Initial and regular follow-up clinical audits of systemic HPCIA use every 6-8 weeks as part of a repeated Plan, Do, Study, Act (PDSA) cycle.

- Driver diagrams were used to help identify potential preconceptions and behaviours to challenge in practice
- Audit results were displayed visually at each regional clinical meeting and ideas for further intervention were discussed
- Evidence and case-based discussions with reflections on relevant case examples were performed in practice to encourage the use of alternative treatment options.

As this initiative was carried out across a range of practices within the region, a tailored approach to implementing interventions was taken for each practice. Each practice had someone acting as champion of the project who was a leader or an empowered vet in the role of QI lead. They were able to implement ongoing audits of their practices' progress and create and implement interventions at the practice level. They facilitated peer to peer discussions within the vet teams at clinical meetings to highlight the issue of ongoing cefovecin use and find useful interventions to implement. They were then able to report at the Regional Clinical Meetings what they had learnt and share useful interventions with other practices. This included actions such as:

- Using the BSAVA PROTECT ME poster as a guide during clinical team meetings to discuss and reflect on which antibiotics were routinely prescribed in common presentations, and why these were chosen.
- Agreeing to no longer routinely stock cefovecin, with ordering replacements and its use strictly limited to be on a case-by-case basis where its appropriateness was clearly indicated by culture and sensitivity results.
 - In one practice, in the 10 months since this decision was made, no orders for cefovecin were placed, demonstrating it was not necessary to use it except in exceptional circumstances.
- Strictly restricting the use of cefovecin and seeking alternative treatment options for cats presenting with cat bite wounds.
- Cefovecin use was also restricted in cats presenting with dental disease and urinary tract infections. This is an ongoing topic for discussion to help reduce the reliance on cefovecin.
- Increasing the stock levels of oral medication alternatives, especially liquid amoxicillin-clavulanic acid, to facilitate easier administration in difficult patients.
- Emphasising owner education in the use of oral medications, with a focus on practical demonstrations of how to administer the medication appropriately allowing for alternative treatment options to be prescribed.

- Targeted approach to compassionate conversations with practices and individuals with higher prescribing rates and benchmarking with colleagues to further encourage buy-in and reduced cefovecin use.

The Regional Clinical Meetings formed a key platform to support and enable those conducting the improvements. Initially, the meetings allowed us to spotlight the issue and launch the improvement project, and then we were able to share ongoing progress at each subsequent meeting. The meetings themselves were hosted remotely every six to eight weeks which allowed us to keep our focus and momentum with the project, without interfering with the rest of the important work going on in practice. During each meeting, a progress report was shown using the most up to date data available. This was followed by an opportunity to share ideas for interventions that could or were in the process of being made in practice and provide an opportunity to report back on their effectiveness. This allowed regular encouragement, motivation and support for those implementing change.

Results

As the graphs below demonstrate, we achieved a significant reduction in the use of cefovecin injections administered across the nine practices in the South 4 region. In the 12 months following the launch of the initiative, we saw a >70% reduction in the average number of injections.

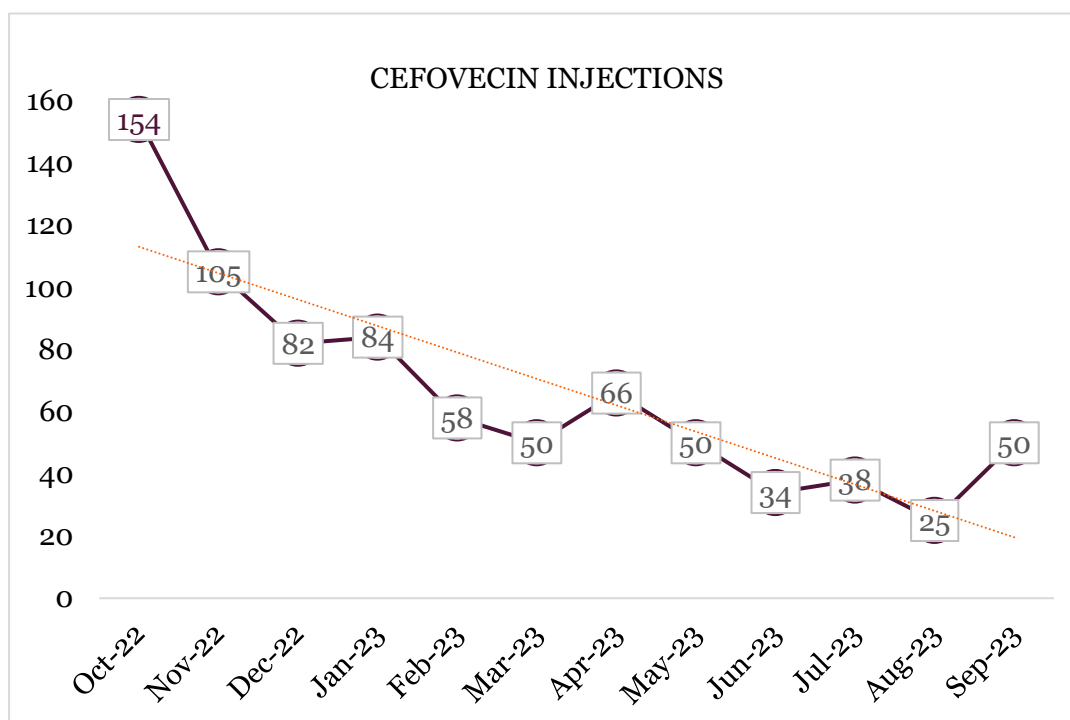


Figure 1: Total number of cefovecin injections administered each month for all nine practices in the South 4 region

We saw a reduction in systemic HPCIA use across the South 4 region each month, with a clear decreasing trend corresponding with the reduction in cefovecin use. We achieved a 65% reduction in the average use of systemic HPCIA and a final 3-month rolling average across June, July and August 2023 of 0.25% - successfully reaching the goal set at the start of the project.

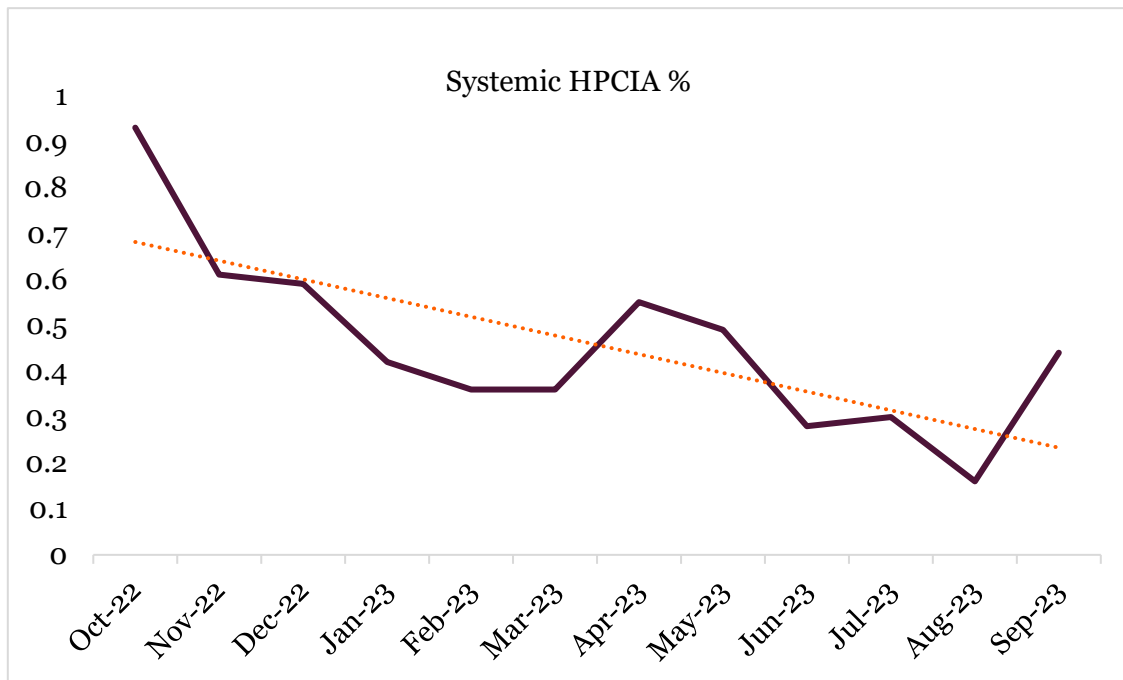


Figure 2: Timeline of the percentage of systemic HPCIA use across the South 4 region by month

Interestingly there was a spike in April that can be seen in both graphs. Initially, it was feared that certain practices had reverted to giving more cefovecin injections. However, on further investigation, it became clear that this increase was driven by a single site with ongoing high use that was skewing the data for the rest of the region. Further interventions were made at this practice leading to an improvement in June, July and August, and additional interventions are planned for the future. We expect these to have a significant positive impact on the South 4 region's systemic HPCIA use going forward.

Impact of intervention

Engagement from the vet teams on the ground varied. Most vets were willing to engage with the initiative once they were shown sufficient evidence regarding the effectiveness of alternative treatment options as well as the testimonies from colleagues to support the change. In the practices that successfully reduced their use of cefovecin, no significant deterioration in patient outcomes was observed, further convincing the vets involved and contributing to a permanent improvement.

In certain practices, individual vets quickly returned to their routine use of cefovecin, despite voicing their agreement to change and in these sites, more drastic measures to block or reduce access to cefovecin were necessary to break their ingrained habits, which were implemented to varying success. Those that placed additional barriers in the ordering process for cefovecin bottles were the most effective.

Attempting a QI project across multiple practice teams was not without its challenges. We used the regular Regional Clinical Meetings to display the progress being made in the practices and kept the focus on the importance of AMR and how a small change to an individual's behaviour can have a big impact and make a real difference to a relevant issue. This ongoing focus allowed us to stay on course when other issues became more pressing and provided a useful opportunity to share and spread effective ideas. At the final Regional Clinical Meeting, we shared our successful outcome and discussed interventions which we believed had the biggest impact and also remembered to take a moment to reflect on what we had achieved.

The results were then presented to the Clinical Leads of the other regions of CVS Small Animal practices in a separate meeting. This allowed us to display the remarkable progress we had achieved over the course of the year, and to share the resources and learning gained from the project. The meeting ended with a graph to show how the South 4 region was now an outlier, and a challenge was presented to the other regions to emulate our success. The results were also shared at an AMR day to further promote spread.

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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.

The veterinary clinical audit cycle

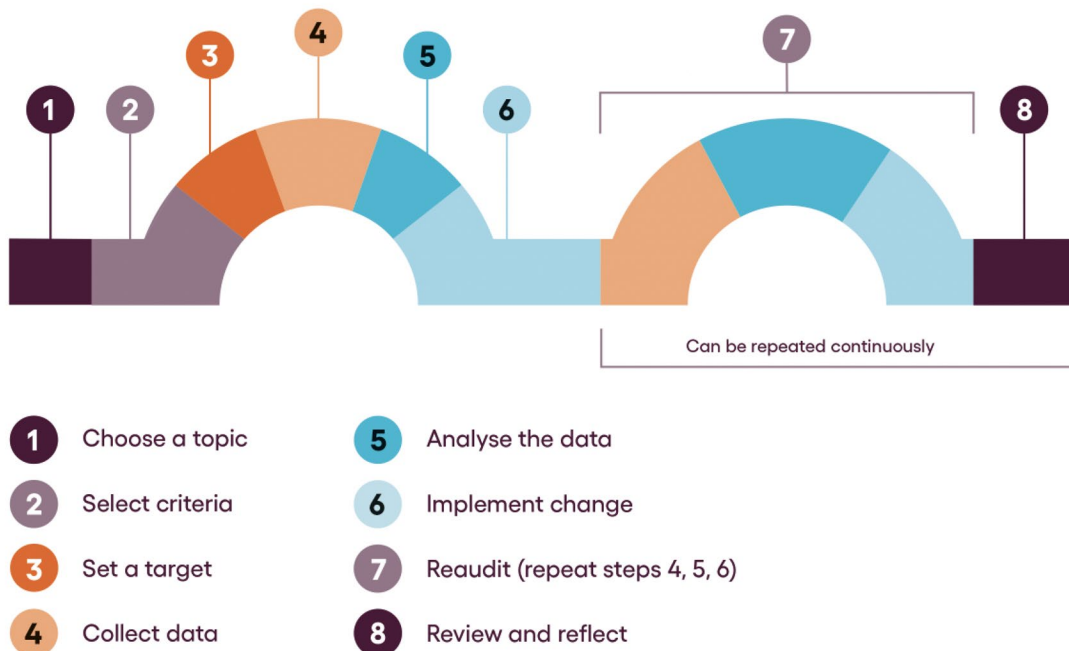


Figure 3: The Veterinary Clinical Audit Cycle by RCVS Knowledge. Available from www.rcvsknowledge.org. Developed by the Royal College of General Practitioners www.rcgp.org.uk/qi-ready

1. Choose a topic relevant to your practice

The topic should be amenable to measurement, commonly encountered and with room for improvement. The team decided to look at the number of systemic and topical highest-priority critically important antibiotics (HPCIA) used across the CVS South 4 region. This audit focused on cefovecin use after finding the majority of HPCIA use was due to cefovecin injections administered to cats suffering from bite wound abscesses and other superficial skin infections.

2. Selection of criteria

Criteria should be easily understood and measured. All animals receiving prescriptions for systemic and topical HPCIA were included in the audit to establish the benchmark. Analysis of the data found the majority of HPCIA use was in feline patients presenting with bite wound abscesses and superficial skin infections.

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. The target was to reduce the prescribing of systemic HPCIA's for the South 4 region to less than 0.25% of consultations each month.

4. Collect data

Identify who needs to collect what data, in what form and how. Data was collected via the practice management system to compare the number of HPCIA prescriptions to the number of appointments undertaken.

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. A six-month initial data collection showed an average prescribing rate of 0.8% across the region, with the majority of HPCIA use attributed to cefovecin injections administered to cats suffering from bite wound abscesses and skin infections. A belief that abscesses needed to be treated with antibiotics and the difficulty in administering oral medication were identified as barriers to change.

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. The Plan, Prevent, Protect framework was used to identify actions to drive improvement. A range of CPD resources was combined into an email campaign to encourage reflection and discussion amongst individual practice teams. A tailored approach to restricting cefovecin availability, finding alternative treatment options and providing owner education was developed by project champions at the individual practice level to suit their needs.

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. Re-audit Data was collected every 6-8 weeks to assess progress. In the 12 months following the project launch, the South 4 team achieved a >70% reduction in the average number of cefovecin injections administered, as well as a corresponding 65%

reduction in systemic HPClAs, successfully reaching their target of 0.25% in a 3-month rolling average in June, July and August 2023.

8. Review and reflect

Share your findings and compare your data with other relevant results. This can help to improve compliance. The South 4 team shared progress reports and results at regular Regional Clinical Meetings. This provided a key platform for encouraging engagement, sharing learning and discussing interventions where needed. The resources and full audit results were shared with the Clinical Leads of other regions within CVS, who are looking to adopt similar projects in their regions.

Annex 1

At the project launch, the following CPD/resources were combined into an email campaign that was sent to all the vets in all the participating practices to inspire and encourage discussion between the vets regarding the use of cefovecin in practice.

- World Antimicrobial Awareness Week facts and figures regarding antimicrobial resistance and the threat to humanity which AMR presents².
- The results as available at that time from the prospective audit performed by the team at White Lodge Vets in Exmouth regarding the treatment of Cat Bite Abscesses without antibiotics (now with an AMS award) which showed 86% of cats made a full recovery from their infected wounds without any antibiotics prescribed or administered³.
- The BSAVA PROTECT-ME¹ poster section on skin and ear infections which does not recommend the use of cefovecin as a first-line drug in any circumstance, and only recommends antibiotics for systemically unwell patients.
- The BestBETS for Vets literature review query which showed no evidence for the use of systemic antibiotics for the treatment of cat bite abscesses.
- Testimonies from the best performing practices as to how they had successfully stopped using cefovecin without any detriment to patient outcomes.

References

1. BSAVA (2022) Protect Me. [Online] Available from: <https://www.bsava.com/resources/veterinary-resources/protect-me/>
2. *Antimicrobial Resistance* (2023) [World Health Organization (WHO)] [Online] Available from: <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>
3. *Cat bite abscess Clinical Audit by White Lodge Veterinary Surgery* (2023) [RCVS Knowledge] [Online] Available from: <https://knowledge.rcvs.org.uk/document-library/knowledge-award-antimicrobial-stewardship-2023-champion-cat/>



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Interested in submitting your own case example? Email us at ebvm@rcvsknowledge.org.