

**Library & Information Services**

**Journal Club Checklist**

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|  | **Antimicrobial & antiparasitic use and resistance in British sheep and cattle: a systematic review** *Preventive Veterinary Medicine*, Volume 185, 105174 |
| **What are the aims or objectives of the study?** | The aim of this study was to conduct a systematic review on the use and resistance of antimicrobials and antiparasitics in cattle and sheep production systems in Britain to provide an overview of the current situation and identify gaps in knowledge.  However, the protocol provided in the supplementary material states that *The primary objective of this systematic review is to identify and describe the existing literature detailing the level of usage and resistance to anti-infective agents in British sheep and beef production systems. While antibiotics and anthelmintics are known to be the two major classes of anti-infective agents used, the review will also include other classes of antimicrobial (such as antiviral, antifungal, and antiprotozoal drugs). A second objective is to identify any research gaps within this topic. A third objective is to capture information on the risk factors for usage and resistance.*  **Which of these do you think best describes the information provided in the paper and why do you think that these might be different?** |
| **Who carried out the research?** | This systematic review was carried out by researchers at the Veterinary Epidemiology, Economics and Public Health Group, Department of Pathobiology and Population Sciences, Royal Veterinary College, and the Centre for Agriculture, Food and Environmental Management Research, School of Life and Medical Sciences, University of Hertfordshire. |
| **Are there any potential sources of bias?** | The study was funded by the Cadogan Charity with matched funding provided by the Royal Veterinary College and the University of Hertfordshire.  **Is there any reason to think that there may be any sources of bias in the study?** |
| **Is there a specific research question or hypothesis?** | The main question that this paper seeks to answer is what literature has been published, over the last 10 years, which describes the level of anti-infective usage and resistance in British sheep and beef production systems?  From this the authors hoped to be able to meet the objectives of the study to detail *the usage of, and resistance to, antimicrobials and antiparasitics in sheep and cattle farming systems in Britain as well as identify knowledge gaps.* |
| **Why do you want to review this paper?** |  |
| **What methods did the researchers use?** | The authors carried out a systematic review to locate relevant papers to answer their research questions.  What search strategy did the researchers us in carrying out this systematic review? Was this appropriate? |
| **Is the search strategy clearly described?** | Questions you might consider include?   * Which databases were searched? * What search terms were used? * What inclusion and exclusion criteria were applied? * What other data were included? |
| **Do you think the search would have found all the relevant important papers?**  **If not, why not?** |  |
| **How many papers were included in the analysis?** | A total of 773 articles were screened for this review, and 126 full text records were assessed, 81 of which failed to meet the inclusion criteria and were excluded. Forty articles and five reports remained and were included for data extraction.  Further details of the assessment process are provided in Figure 1 and Table 2. |
| **Did the authors select appropriate papers to include in the analysis?** | This can be difficult to determine from the paper. However, the full list of papers included is provided in a spreadsheet in the supplementary materials which gives greater detail.  It is interesting to note that despite the emphasis on beef cattle, some of the papers and reports also contain information on dairy farms. The authors explain this as around half of British beef is supplied from the dairy sector (through calves and cull cows) (AHDB, 2017) the use of antibiotics in dairy cows was considered a relevant indicator of antibiotic use in red meat production. |
| **Do you think the authors did enough to assess the quality of included studies?** | Is the process of assessment described? |
| **What are the overall results of the review?** | As this is a systematic review the results section reports the number and types of studies included with the analysis of the content of these papers in the discussion section.  **Under what headings were results reported?**  **How many papers were found under each heading?**  **Do you think that these papers are likely to provide a representative picture of antimicrobial & antiparasitic use and resistance in British sheep and cattle? If not, why not?** |
| **What observations did the authors make about the literature that they included in this systematic review?** | The authors commented on the low number of publications (40 papers and two report series) reporting on use or resistance of antimicrobials and antiparasiticsin sheep and cattle in Britain.  **What observations did they make about the relative coverage of cattle and sheep?** |
| **What do you think are the most important findings of the study?** | You may like to look at the information in Section 4 under the following headings:   * Antibiotic usage * Antibiotic resistance * Anthelmintic usage * Anthelmintic resistance |
| **Do you think that the results answer the research questions?** |  |
| **Were any knowledge gaps identified?** And did the authors make any recommendations on how these could be addressed? | The authors note that currently, data on antibiotic resistance in sheep and cattle in Britain is subject to selection bias, being based on specimens from clinical cases, an issue which could be addressed though the development of an active surveillance system.  The authors note that the small number and fragmented nature of studies identified by this review describing anthelmintic usage, and the lack of available national sales data, prevented the identification of trends in either sheep or cattle.  The authors also note that some of the findings identified by this review were limited in their usefulness due to a lack of comparability and that researchers and governing bodies  should take efforts to produce metrics which are comparable across species, sectors, and time.  **What recommendations did the authors make?** |
| **What are the limitations of the study?** | The authors note that a major caveat of these findings is the poor level of coverage afforded to studies of sheep and cattle (especially beef production systems) in Britain; small sampling sizes with frequent use of convenience sampling over random sampling are likely to lead to unrepresentative results. |
| **Are there any questions that you would consider important that were not addressed in the review?** |  |
| **Can the results be applied to your practice?** Is the review relevant to your patient population? Are there any changes you could make to your current prescribing practices? |  |
| **Do the findings provide sufficient evidence for you to consider changing your current practice?** |  |
| **Having read the paper are there any other sources of information you need to access before changing practice?** | You might like to look at the following resources produced by RCVS Knowledge:  [Farm Vet Champions](https://knowledge.rcvs.org.uk/quality-improvement/farm-vet-champions/)  [Responsible use of antibiotics in veterinary practice](https://www.infocusvj.org/responsible-use-of-antibiotics-in-veterinary-practice/) |