

**Certificate in Advanced Veterinary Practice
B-PAP.2 Production Animal Practice
(in the context of cattle, sheep and camelids)**

Module Syllabus



Module Leader:

**Mr John Fishwick MA VetMB DCHP DipECBHM
FHEA FRCVS PGCertVetEd MRCVS
Associate Professor of Dairy Herd Medicine**

Introduction

This module covers the principles of veterinary practice as they relate to production animals, generally defined as animal species which may be used for human consumption or whose products may be used for human consumption. Production animals specific to this module can include cattle (dairy and beef), sheep (and other small ruminants) and camelids.

Because the general principles of production animal practice are deemed to be relevant to all species, the module may be studied in the context of just one or more than one of the production animal species mentioned above. This module is not a specialist small ruminant or camelid module but attempts to accommodate the practitioner who has an interest in these areas alongside their cattle work.

This module is required by candidates who wish to achieve a designated CertAVP and provides the foundation for further study in a number of CertAVP C level modules, including veterinary public health, animal welfare and reproduction.

Aim

The aim of the module is to provide the foundation for developing expertise in production animal veterinary practice. Its specific objectives are:

- To develop the clinical decision-making and reasoning skills required by advanced practitioners, including the ability to gather, organise, analyse, interpret and present complex data and information.
- To develop communication skills, particularly the ability to write case reports as a means of articulating clinical reasoning and decision-making processes.
- To develop the reflective skills needed to improve understanding of issues raised in clinical practice and to help evaluate learning progress and learning needs.
- To expand and deepen technical knowledge of all aspects of production animal veterinary practice.

Learning outcomes

On successful completion of the module, you will be able to:

- Apply pathophysiological knowledge, epidemiological principles and evidence-based approaches (including selection of appropriate diagnostic procedures) to the evaluation and management of individual clinical cases and population problems in a chosen area of production animal veterinary practice.
- Apply therapeutic and surgical principles, including anaesthesia and sedation, to the management of clinical and population health problems in a chosen area of production animal veterinary practice.
- Describe use of diagnostic imaging, if appropriate, in your practice premises and (where applicable) in the field, including quality control procedures in place that allow for the safe production of diagnostic images
- Provide practical advice on population health and welfare in a chosen area of production animal practice
- Discuss the practical application of available information technologies for improving animal health and production.

Content

The scope and level of study which you will need to undertake in order to achieve the intended learning outcomes will depend on your existing familiarity with the topics, your individual learning needs, the production animal species being studied and the educational approach taken by module providers. The topics listed below are indicative of the required areas of study – they are not intended to be prescriptive, and they should be viewed in the context of the production animal species being studied.

Evaluation and management of clinical cases and population/herd/flock health disease problems

- Application of evidence-based veterinary medicine
- Selection of appropriate laboratory diagnostic procedures and interpretation of results
- Diagnostic imaging, as appropriate, including radiology and diagnostic ultrasound
- Fertility and reproduction management, including approaches to pregnancy diagnosis where appropriate
- Disease dynamics in populations

Therapeutics and surgical practice

- Clinical pharmacology
- Surgical practice, including pre-operative evaluation, aseptic techniques, peri-operative analgesia, post-operative care and client education
- Anaesthetic management, including pre-anaesthetic assessment, sedation, analgesia, anaesthetic equipment, monitoring and supportive measures, recovery/post operative care

Population health and welfare

- Welfare, nutrition and husbandry
- Health and disease surveillance
- Population/herd/flock health planning and disease control
- Information technologies for improving animal health and production (for example, specific software analyses and farm databases)

Assessment

- Four case reports of 1,000 - 1,500 words each. All cases are to be managed by you and should demonstrate that you have dealt competently with a range of commonly presented conditions or situations from the area of practice in which you are working. Of the four case reports, one can be a camelid report **and** one can be a small ruminant report with the remainder based on cattle.

The first case report receives written formative feedback and you will be given an opportunity to speak to the module leader for verbal feedback too. You can ask for clarification on any points in the feedback, the module leader can explain in more detail the feedback they have provided, and help explain the process of reflection. This is also a good opportunity to discuss any uncertainties you have about the BPAP module, and how to make it fit your particular interests.

- One literature review of 1,000 - 1,500 words on a topic of your choice related to production animal health or medicine. This could be based on a case that you have seen in practice or on an area of particular interest to you. The review should focus on the current literature/evidence as appropriate for the topic.
- A 1,000 - 1,500 word essay justifying your choice of cases and reflecting upon your learning during the module. This might include what has changed in your approach to a case, any new procedures or investigations that are now considered, any additional reading which was helpful, and/or any unexpected features of a case which will influence decision making in the future. This essay should only be submitted after all case reports/essays are assessed and returned to you as it is possible that the assessor feedback from the case reports/essays may contribute to your learning through the module.

All work submitted received feedback/results within 4 weeks.

It is important to realise that if your report represents a low level of reflective competence and under-developed engagement with the case history, then the feedback will likely be targeted at helping you to achieve a passing grade; it will not represent the steps required to achieve a merit or distinction.

Assessment weighting

- | | |
|---------------------|----------------------|
| • Case reports | 80% (20% per report) |
| • Literature review | 20% |
| • Summary essay | Pass/Fail |

The final summary essay will **not** receive a mark but submitting and passing it is a condition of passing the module.

Assessment cycle

Reports may be submitted at any time during the year and they will be assessed within four weeks of receipt. The module leader will **review your first case report**; you must receive this feedback before submitting further cases for marking.

You are strongly advised to submit your reports in stages rather than all at once. It is recommended that one or two reports be submitted initially, after which the feedback received should be used to inform and improve subsequent submissions. This process enables you to gain a clear understanding of the standards and expectations required. Furthermore, any deficiencies identified in the early submissions, such as grammatical or spelling errors or incorrect referencing, can be addressed before the remaining reports are submitted. Although it is permissible to submit all four reports simultaneously, this practice is not recommended.

The summary essay may only be submitted after all five of your reports have been assessed and returned to you as it is possible that the assessor feedback from the five reports may contribute to your learning through the module.

Learning support

Learning support is provided to aid self-directed learning and to provide easy access to published articles. You will be given a username and password which will allow you to log on to 4 different systems:

1. RVC Learn (<http://learn.rvc.ac.uk/>)

- Articles of interest for all areas covered in the module
- Access to Induction Day presentations
- Discussion boards between other candidates enrolled on the module and with RVC tutors
- Access to the Library Catalogue, [RVC's solution for the discovery and delivery](#) of resources including books, ebooks, journal articles and digital objects, all in one single search. Log in using your RVC username and password to save items on your eshelf. If you are able to use the library in person, you can borrow a book for one week with photo ID. IT and Library support is available for this facility (email library@rvc.ac.uk or helpdesk@rvc.ac.uk).

2. RVC Intranet (<https://intranet.rvc.ac.uk>)

Access to all information available to all RVC students and employees, for example, news, events, policies, committees, services, Library, IT helpdesk, etc.

3. Athens (<http://www.openathens.net/>)

A huge amount of any library's information is now available online, e.g. electronic journals, e-books and databases. 'Athens' is a system used by UK universities for controlling access to these types of online services and with your username and password, you can access many of a library's online databases, electronic journals and e-books seamlessly.

4. Email (<http://mail.rvc.ac.uk>)

You are given an RVC email address, which is **compulsory** to use for CertAVP communication and submission of work.

Case report guidelines

The following framework should be used as a guide to the structure of the four case reports:

- Unit summary (size, type, location indoor/outdoor etc.)
- Client complaint (why did they call the vet?)
- Relevant history/medications/vaccinations
- Summary of situation
- Differential diagnoses, and diagnostic tests and diagnosis/diagnoses
- Treatment (s)
- Response
- Impact on farm of disease and intervention/economics
- Control and prevention of future cases
- Discussion (this should comprise 35-40% of case report)
- References

You should show the limitations of the case (i.e. insufficient sampling) and discuss the differential diagnoses, how the disease developed, basic epidemiology, its financial impact, and ethical and welfare implications. Where appropriate, you should include a justification of 'pragmatic' advice rather than the 'text-book' answers. Where relevant, you should also discuss relevance for public health and food safety and appreciation of the impact of animal health, farming and veterinary practice on antimicrobial resistance and environmental impact.

You should show familiarity with legal and licensing issues related to medicine use and show your evaluation and interpretation of animal and farm records as an aid to achieve an individual animal or herd diagnosis.

Work must include **reference to relevant literature** and must also relate to your **personal experience** as a practising veterinary surgeon. In relation to RCVS and Framework for Higher Education Qualifications Masters Level requirements, **references** to relevant literature should be used to inform an analysis and understanding of experience, as well as inform plans for further development.

Every case report must include **reflection and critical evaluation** of the choices you made and the outcomes of the case. When reflecting, you might think about other diagnostic

options you could have used, any limitations in the final diagnosis, or ways the case could be managed better in the future.

If your decisions were not fully in line with “best practice,” it’s important to consider how significant that was and whether you would make a different choice next time. You don’t need to reflect on every part of the case — instead, choose the aspects that are most important or most relevant to the outcome.

Case reports that do not include discussion of decision-making, reasoning, and reflection are unlikely to pass.

Literature review guidelines

The literature review of 1,000 – 1,500 words must be submitted, which is marked and weighed similar to the case report, contributing 20% to the final mark. This can be based on a case seen in practice (but must not cover the same topic as any of the case reports) or can cover an area of particular interest of the candidate. Topics can be taken from any subject of the syllabus and may include individual disease prevention and treatment protocols, herd preventive or treatment measures, nutritional, housing or welfare measures, pharmaceutical interventions and public health and environmental issues.

The basis of the literature review should be a CAT type question (Critically Appraised Topic), e.g.

- “Is treatment or vaccination X effective against disease Y?”
- “Does the application of the management measure X increase yields/growth or reduce disease Y?”
- “Is there a link between disease X in livestock and disease Y in humans?” etc. etc.

The relevant literature is then screened and a number of papers (suggested between 5 and 15) used for the review, outlining and discussing possible reasons for different outcomes in different studies.

The review should be based on the following structure:

1. CAT Question
2. List of papers and main outcomes
3. Discussion of differences and similarities in outcomes between different papers
4. Conclusion and practical relevance
5. References

It is very useful to summarise the papers in a table in an appendix, similar to the following example:

Table 1. Summary of the five peer-reviewed papers and one conference abstract describing aspects of claw trimming technique in cattle

Author, date and country	Study population	Study design	Outcomes	Key results	Study weaknesses
Phillips et al (2000), UK	36 distal limbs from nine heifers of mixed breeds at approximately 9 mo.	Cross-over intervention study comparing frictional characteristic of hooves before and after trimming.	Mean coefficient of static friction.	DFSM trimming increased claw grip: <ul style="list-style-type: none"> • Prior to trimming – 0.361μ • After trimming – 0.395μ $p < 0.001$. 	Heifers selected were unrepresentative of the national dairy herd: <ul style="list-style-type: none"> • 6 different breeds • 9 months old • 78 kg of load on each leg.
Van der Tol et al (2004), the Netherlands	Hindlimbs from five Holstein-Friesian cows from the experimental farm at Utrecht University.	Clinical trial comparing claw balance before and after trimming intervention. Each cow used as its own control.	Weight balance between medial and lateral claws.	Corrective trimming using the Dutch Five Step Method (DFSM) improved balance across the medial and lateral claws: Before trimming – lateral:medial (80:20) After trimming – lateral:medial (70:30). Trimming increased claw floor contact area by 45%, reducing average pressure, but not maximum pressure.	Small sample size. No follow up. Weight bearing from each leg measured at different times and added up to 110% of the animal's weight. All trims performed by a single trimmer, harder to extrapolate to the general population of trimmers.
Nuss and Paulus (2006), UK	Hindfeet from 40 Simmental cows at an abattoir.	Cross-over intervention study before and after a DFSM trim.	Toe and sole depth	In step 2 of the Dutch Five Step, Nuss et al found that when both claws are trimmed to the same depth, the lateral claw horn is significantly thinner (2.71 mm) than the medial (5 mm). Strict adherence to step 2 could lead to over trimming the lateral sole.	Beef cows are likely to have different trimming requirements to Holstein-Friesians. Lack of detail on how heel balance was judged.
Burgi and Cook (2008), USA	Personal experience.	Opinion based on field comparisons.	Proposed three adaptations to the Dutch Five Step.	<ol style="list-style-type: none"> 1. Increasing the dorsal wall angle from 48° to 52° 2. Trimming the flat sole surface of the medial claw to the sum of the dorsal wall length and sole thickness (around 80 mm) 3. A deeper model of the lateral claw sole in step 3. 	Lack of evidence. Impractical to measure dorsal wall angle.
Ouweltjes et al (2009), the Netherlands	400 Holstein herd	Randomised positive control trial with 5 groups, 4 free stall automatic milking: <ol style="list-style-type: none"> 1. Tx slatted concrete 2. Tx slatted rubber 3. Cx slatted concrete 4. Cx slatted rubber 	Lesion prevalence Claw dimensions Activity.	No significant difference between trimming methods and lesions. Cows on rubber had significantly fewer sole haemorrhages at the 3 month inspection (22 vs 48% prevalence).	Cows from one farm, with a low incidence of lameness.

An article by Rachel Dean on “How to read a paper and appraise the evidence” can be found here:

https://bvajournals.onlinelibrary.wiley.com/doi/epdf/10.1136/inp.f1760?saml_referrer

Summary essay

The final submission is a 1,000 - 1,500 word reflective essay discussing the reasons for your choice of cases, your learning during the module and how this learning has influenced your and/or your team's current and future practice. This might include what has changed in your approach to a case, any new procedures or investigations that are now considered, any additional reading or learning strategies which were helpful, support you have been able to give to your colleagues, and/or any unexpected features of a case which will influence decision making in the future.

It can be helpful to base the essay using the reflective **Three Whats** approach:

- **What?** (did I do/observe/write about)
- **So What?** (did I learn)
- **Now What?** (how will this change my practice in the future).

This essay should only be submitted after all case reports are assessed and returned to you, as it is possible that the assessor feedback from the case reports may contribute to your learning through the module.

Each case report has a 20% weighting of your final module result. The final summary essay will not receive a mark but submitting and passing it is a condition of passing the module.

Submission of work

Please ensure that your work includes this table on the front page:

Name:	
Module:	B-PAP.2
Piece of work:	
Word count: (excluding tables, photo titles and references)	

To submit a report for review/marking, **it needs to be uploaded on to Learn**; you will be given further instructions when you enrol.

Case reports/essays word counts between 1,000 and 1,500 words are acceptable; a case report/essay that exceeds the permitted word count will be returned to you for re-submission within the word limit. This is in the interest of fairness as it is difficult to compare an essay exceeding the word limit with one which has been kept to the required limits. Additionally, the ability to keep a discussion tightly focused, with every word counting, is an important skill to have developed at this level. Information included in a table will be included in the word count unless it is mainly numerical information (e.g. laboratory data in a table is not included in the word count).

Two attempts are permitted for every piece of work, and if your grade is such that you need to submit your work again, this is usually because your tutor feels there would be a benefit in developing your analytical skills. We appreciate that it can sometimes feel rather confronting/uncomfortable when your work is critiqued, but it is important that you spend time reflecting on the feedback and how to apply it.

Marking is overseen by the RVC's award and assessment regulations, which ensure consistency of marking between individuals.

Please note that although presentation of work does not affect your marks, it is recommended that text font and size, paragraph spacing, layout, spelling and grammar are considered when writing your essays.

The summary essay may only be submitted after all four reports and the literature review have been assessed and returned to you as the assessor feedback may contribute to your learning through the module.

References:

- The decision or overall judgment you make about the factors that you are discussing must be supported with evidence from reliable sources.
- References should be properly cited in the text, in accordance with the style in the *Journal of Small Animal Practice (JSAP)* or *Veterinary Record*.
- Avoid listing references that were not cited in the text or vice versa.
- We recommend using Harvard referencing as described by the Anglia-Ruskin University (<http://libweb.anglia.ac.uk/referencing/harvard.htm>).
- You will find it very helpful to use a program such as Endnote® or Reference manager® to organise your references.

Plagiarism:

All written work submitted to the Royal Veterinary College is passed through plagiarism detection software. Work submitted for this module should not have been submitted for any other courses at RVC or other institutions.

Mentor

You may wish to have a mentor with which you can discuss cases. Ideal mentors would have post-graduate qualifications (for example, certificate, diploma) relevant to production animal practice and finding a mentor and maintaining appropriate and regular contact are the responsibility of the candidate. Mentors operate on a goodwill basis only and RVC academic staff will not be available as mentors.

Recommended reading list

The following list is given as a guide as to where to start and for this reason cannot be considered 'complete'. We also don't expect you to read texts from cover to cover or to use all of the texts listed, however we do recommend you make use of the most recent edition of textbooks where available. We apologise if you feel a particular favourite is missing - feel free to use the Learn discussion board to pass on additional suggestions to other candidates.

Please note that we also expect you to read selected articles that are relevant to the particular case that you choose to write up from peer reviewed publications such as:

- i) Journal of Dairy Science
- ii) Preventive Veterinary Medicine
- iii) The Veterinary Journal
- iv) Theriogenology

(these journals also form the core reading for the Diploma awarded by the European College of Bovine Health Management)

In addition the following journals provide review articles on most relevant topics

- i) In Practice
- ii) UK Vet Livestock

Other suggested texts include:

- Production Diseases in Farm Animals (Gross), 2024
- Veterinary Medicine - A textbook of the diseases of cattle, horses, sheep, pigs and goats (Constable, 2016)
- Rebhun's Diseases of Dairy Cattle (Divers & Peek), 2017
- Bovine Medicine: (Cockroft) 2015
- Goat Health and Welfare: A Veterinary Guide (Harwood), 2019
- Sheep Flock Health: A planned approach (ND Sargison), 2008
- Diseases of Sheep (edited by Ian Aitken), 2007
- Medicine and Surgery of Camelids (Niehaus) 2022