



European College of Veterinary Pharmacology & Toxicology

Day-1-competences for specialists in veterinary pharmacology and toxicology

The European College of Veterinary Pharmacology and Toxicology (ECVPT), as part of the European Board of Veterinary Specialisation (EBVS), has the duties to set and monitor the standards of the residency programmes under its auspices. The “day-1-competences” describe the knowledge, skills and attributes required of veterinary specialists in veterinary pharmacology and toxicology upon obtaining their diploma (certification) to ensure that they are prepared for their role as specialists and work independently.

Competence has been defined as “the ability to perform the roles and tasks required by one’s job to the expected standard.” The standard of competence expected at any given time will vary with experience and responsibility, and it is recognised that the day-1-competences represent a specialist in veterinary pharmacology and toxicology at the start of their career. Competence is therefore a relative term, both in terms of task and fluency in its execution, and increasing levels of competence will be expected throughout the professional’s career.

These competences are listed as individual entities. Specialists in Veterinary Pharmacology and Toxicology are expected to integrate these competences in their professional life.



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1. General professional skills and attributes expected of a specialist in veterinary pharmacology and toxicology

The competences within this domain describe the attributes and behaviours of a professional specialist in pharmacology and toxicology. Competences within this domain include understanding professional procedures, recognition of one's own abilities and limitations, and how to act and/or react to different situations and circumstances.

1.1. Personal leadership - professionalism

1. Act in a way that shows understanding of ethical and legal responsibilities, appropriately balancing competing interests. *Specialists in veterinary pharmacology and toxicology need to be able to make professional judgements based on sound principles. They must be able to think through the dilemmas they face when presented with conflicting priorities and be prepared to justify the decisions they make. Specialists in veterinary pharmacology and toxicology must take account of the possible impact of their actions beyond the immediate workplace, for example, on public health, the environment and society more generally.*
2. Demonstrate the ability to critically review and evaluate evidence, in support of practising evidence based veterinary medicine. *Specialists in veterinary pharmacology and toxicology must be able to appreciate the difference in value to be attached to different sorts of literature, presentations and evidence, for example, recognising different forms of bias.*
3. Contribute as appropriate to the advancement of veterinary knowledge and more specifically knowledge in the domain of pharmacology and/or toxicology, in order to improve the quality of animal care and public health.

1.2. Personal leadership - self-awareness and self-reflection

1. Demonstrate situational awareness through navigating and responding to the economic and emotional context in which the specialist in veterinary pharmacology and toxicology operates. *Specialists in veterinary pharmacology and toxicology need to be resilient and confident in their own professional judgements to withstand the stresses and conflicting demands they may face in the workplace.*



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2. Demonstrate a commitment to learning and professional development, including recording and reflecting on professional experience and other learning aimed at improving performance and competence. *Specialists in veterinary pharmacology and toxicology must maintain and develop their knowledge and skills relevant to the specialty and competence. This includes being able to reflect, learn, and share information gained with others.*
3. Engage with self-audit and peer-group review processes in order to improve performance. *Specialist in veterinary pharmacology and toxicology must regularly review how they are performing in their day to day professional work, and play an active part in performance appraisal (re-certification every 5 years).*
4. Demonstrate ability to manage in situations where information is incomplete, deal with contingencies, and adapt to change. *Specialists in veterinary pharmacology and toxicology need to be able to adapt their approach to fit changing circumstances, know how to cope appropriately when either making other plans or adapting to contingencies and the unexpected, and identify appropriate alternative solutions.*

1.3. Professional commitment

1. Understand the ethical and legal responsibilities of being a Specialist in veterinary pharmacology and toxicology in relation to the veterinary profession, society, other stakeholders and the environment.
2. Reflect on the science and practice of veterinary pharmacology and toxicology and on how this can support biomedical science disciplines as a whole.
3. Reflect on the social role of the specialist in veterinary pharmacology and toxicology and specifically the responsibilities of specialists with regard to their employers, co-workers, colleagues, regulatory authorities and general public.

1.4. Reflective relationships - collaboration and communication

1. Communicate effectively with stakeholders, including clients, the public, professional colleagues and responsible authorities, using language appropriate to the audience concerned.
2. Work effectively as a member of a professional/inter-professional team, fully recognising the contribution of each professional, and demonstrate an understanding of cognitive diversity. *The specialist in veterinary pharmacology and toxicology should be familiar with and respect the roles played by others in the team and be prepared to provide effective leadership when appropriate, and contribute to the synthesis that ensures that team outputs are always optimal.*



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2. Scientific, practical and clinical knowledge and competences

This domain describes the scientific, practical and clinical competences, and encompasses the skills, techniques and underlying scientific knowledge that a specialist in veterinary pharmacology and toxicology must possess upon certification. By meeting these competences, specialists in veterinary pharmacology and toxicology demonstrate that they are ready to carry out their duties independently (to a day-1-competence standard). The majority of the competences lie within this domain.

2.1. Current knowledge and competences

1. Reflect on the main current theories, principles and issues (scientific, technical and regulatory) of the discipline (veterinary pharmacology and toxicology).
2. Produce scientific activities (including peer reviewed publications, congress abstracts, expert reports amongst others) in order to contribute to the development of the discipline
3. Solve problems in an analytical and scientific way and be able to assign priorities to the proposed solutions
4. Judge any pharmacological or toxicological problem as it occurs in a variety of settings (e.g. individual patient, at herd level, the environment), including:
 1. Problems that occur during drug development, including pre-clinical and clinical development, safety and efficacy, and after marketing authorisation (pharmaco- and toxicovigilance).
 2. Emerging issues in (clinical) pharmacology, pharmacotherapy, and clinical toxicology (hazard identification).
 3. Create new concepts and opinions for therapeutic intervention (including prophylaxis, metaphylaxis and preventive measures) for diseased or intoxicated animals.

2.2. The role of specialists in veterinary pharmacology and toxicology within their area of expertise

1. Reflect on the contribution of ECVPT Diplomates:
 1. To methods in veterinary preventive medicine, the management of zoonoses and antimicrobial resistance, veterinary toxicology (including regulatory toxicology), and avoidance programmes for undesirable residues in feed and food materials.
 2. Through promoting prudent and strategic use of veterinary drugs and related substances.



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2. Contribute to the national and international knowledge base, records and databanks providing knowledge of drug-interactions, toxins (both natural and synthetic), and interactions of veterinary medicinal products and/or toxins.
3. Develop ethical animal experiments using an optimal design (e.g. GLP/GCP conditions; sample size derived from ad hoc statistical methods), taking the well-being of any animals used into account and considering the non-animal alternatives available.

2.3. New scientific, technical and regulatory developments in veterinary pharmacology and toxicology

1. Reflect on new scientific and technical developments in the discipline, including:
 1. The harmonisation of drug licensing and pharmacovigilance, the evaluation of toxic substances (hazard identification, hazard characterisation, exposure assessment, risk characterisation).
 2. The surveillance and monitoring of toxic and undesirable substances in the food chain.

2.4. Underpinning knowledge and understanding of veterinary pharmacology and toxicology

1. Pharmacodynamics/toxicodynamics. *Analyse and explain in a general sense how and where drugs/toxins work at the molecular/cellular/physiologic level including concepts such as receptor-mediated (e.g., agonists, partial agonists, and antagonists) and non-receptor mediated drug/toxin actions.*
2. Pharmacokinetics/toxicokinetics. *Describe the meaning of pharmacokinetic/toxicokinetic terms, including absorption, bioavailability, clearance, biotransformation, elimination, distribution, and how changes in any of these parameters would tend to affect systemic concentrations of a drug/toxin. Understand how systemic concentrations of a therapeutic drug or a toxin will tend to change if changes are made to the dosing regimen (route of administration, dose, frequency, and duration).*
3. Clinical pharmacology/toxicology. *Design the most appropriate pharmacological protocol (therapies) for common and important diseases/intoxications using knowledge of species, breed, age, sex, disease states, genetics and other factors, and integrate pharmacological therapy in a multimodal treatment plan (i.e., surgery, nutrition, management, etc.). Recognise and compare and contrast clinical signs of intoxications in the major animal species.*



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4. Monitoring therapy.
 1. Be able to outline the desired response to drug therapies as well as reflect on the most appropriate methods to monitor the response.
 2. Compare and contrast common/predictable or catastrophic species-specific adverse drug reactions, new clinical signs of existing disease and medication errors.
 3. Predict and recognise major drug-drug interactions.
 4. In the event of undesired pharmacological responses, determine the most appropriate interventions.
5. Drug dispensing, regulations and ethics. Be able to select, obtain, maintain inventory, prescribe, administer, and dispose of veterinary medicinal products based on regulatory and ethical guidelines. This includes evaluating bio-equivalence and compounding or extemporaneous preparations of drugs.