

**SUGGESTED BLUEPRINT FOR PHASE I  
AMERICAN COLLEGE OF VETERINARY CLINICAL PHARMACOLOGY EXAM**

**GENERAL TOPICS**

Physiochemical characteristics of active pharmaceutical ingredients

- Lipophilicity
- pKa/pH relationship
- Molecular weight
- Solubility
- Enantiomers

Pharmacodynamics:

- Dose-concentration-response relationships
- Drug-receptor theory
- Drug-receptor interactions
- Types of receptors
- Secondary messenger systems
- Measurements of potency, efficacy
- Mechanisms of drug action

Drug movement

- Absorption
- Distribution
- Elimination (metabolism, excretion)
- Proteins involved in drug movement (e.g., drug metabolizing enzymes, transport proteins)

Pharmacokinetics

- Compartmental Modeling
- Non-compartmental Analysis
- Clearance, (apparent) volume of distribution, rate constants, half-lives
- Bioavailability (relative, absolute)
- Bioequivalence

Factors impacting drug movement and/or drug response

- Physiologic (age, gender, species, breed, fed/fasted...)
- Pharmacologic (drug interactions)
- Pathologic (impact of disease)

Routes of administration

Dosing forms (and relevant drug delivery devices)

Adverse events

- Definitions
- Types (I and II or A & B)
- Organs at risk
- Mechanisms of toxicity
- Cellular/organ responses to toxicity
- Measures of toxicity
- Causes for therapeutic failure

**DRUGS**

For each of the following drug classes/body systems, critical information will be:

- Structure activity relationship
- Mechanism of action (as it relates to pathophysiology of target disease) Pharmacologic response

- Clinical pharmacology: ADME
- Dosing forms
- Drug interactions
- Adverse drug events/side effects
- Factors impacting drug disposition/response
- Therapeutic indications
- Regulatory considerations

#### DRUG CLASSES BY BODY SYSTEMS:

##### Nervous System

- Autonomic / Somatic nervous system
- Anticonvulsants
- Behavior modifying drugs
- Opioids
- Tranquilizers/sedatives
- Anesthetic agents (gas, injectable, chemical restraints, local anesthetics)
- Renal
- Diuretics
- pH modifiers
- Hormones (e.g. vasopressin)

##### Cardiovascular

- Vasoactive drugs
- Antiarrhythmics
- Inotropic drugs
- Hematopoiesis Hemostasis

##### Gastrointestinal

- Appetite
- Emesis
- Prokinetics
- Antiulcer
- Antidiarrheals

##### Reproduction

- Oxytocics
- Tocolytics
- Hormone agonists/antagonists

##### Endocrine

- Thyroid
- Pancreas (Diabetes mellitus, etc)
- Parathyroid
- Steroids for systemic use, antiadrenal drugs

##### General and special senses

- Eye (Ophthalmic)
- Otic

Cutaneous (Dermatologic, including drug vehicles)

#### DRUG CLASSES BY TARGET INDICATION

##### Control of inflammation/immunomodulation NSAIDS

- Glucocorticoids
- Immunosuppressive drugs (azathioprine, cyclosporine, etc)
- Autacoids

Anticancer drugs

Cell-cycle specific/nonspecific

Tyrosine kinase inhibitors

Others

Fluid therapy

Acid base balance

Crystalloids/ colloids Electrolytes

Anti-infectives

Antibacterials

Antifungals

Antivirals

Antiprotozoals

Antiparasitides (external and internal)

Botanical/Herbals

SAMe

Cannabinoids

Milk thistle

Glucosamine/chondroitin

OTHER TOPICS

Disinfectants/antiseptics