SUGGESTED BLUEPRINT FOR PHASE II
AMERICAN COLLEGE OF VETERINARY CLINICAL PHARMACOLOGY EXAM

Therapeutics (40 questions)

1. Description of therapeutic interventions, which might include management or prevention of diseases and/or clinical signs.
2. General concepts: This might include the following as it relates to the individual patient/herd, or a general description as it might relate to the target population:
    i. An understanding of the pathophysiology of the disease to be treated or prevented as it relates to targets of drug therapy;
    ii. An overall approach to the treatment/pharmacological prevention of that disease
    iii. A list of drugs / drug classes indicated for that disease;
    iv. Description of the mechanisms of action of those drugs as they relate to the pathophysiology of the target disease;
    v. The best drug choice (which may include preparation choice) for that patient/herd and justification for that choice;
    vi. A description of the disposition of that drug in the normal and altered physiologic states (pediatric, geriatric, diseased) if applicable;
    vii. Relevant potential adverse events;
    viii. A discussion of potential major drug interactions;
    ix. How response to the drug choice will be assessed;
    x. Any regulatory concerns that may impact drug choices or drug use;
    xi. How drug therapy might interact with adjunct therapy (if relevant)
3. Diseases or target interventions might include but are not necessarily limited to:
    i. Control of pain
    ii. Control of inflammation
    iii. Infections (e.g., bacterial, protozoal, fungal, viral, parasitic) including interpretation of culture and susceptibility data
    iv. Anticancer therapy
    v. Central nervous system diseases including but not limited to:
        1. Epilepsy
        2. Behavior modification
        3. Intervertebral disc disease
        4. Meningoencephalitis
    vi. Cardiovascular diseases
        1. Congestive heart failure secondary to specific underlying cardiac disease (acute or chronic)
        2. Primary cardiac diseases
        3. Myxomatous mitral valve disease
        4. Dilated cardiomyopathy
        5. Hypertrophic cardiomyopathy
    vii. Primary or secondary hypertension
    viii. Anti-arrhythmic therapy
    ix. Respiratory diseases (infectious and non-infectious)
        1. Asthma
        2. Equine inflammatory airway disease

3. Pneumonia
4. Bovine Respiratory Disease Complex (shipping fever)

x. Endocrine diseases
1. Diabetes mellitus
2. Hyper/hypothyroidism
3. Hyper/hypoadrenocorticism
4. Hyper/hypocalcemia
5. Equine pituitary pars intermedia dysfunction

xi. Gastrointestinal diseases
1. Inflammatory bowel diseases
2. Acute/chronic diarrhea
3. Dysentery/colibacillosis
4. Colic
5. Liver diseases including chronic
6. Gastrointestinal ulcers including equine gastric ulcer syndrome
7. Pancreatic disease

xii. Renal diseases
1. Acute kidney injury
2. Chronic kidney disease
3. Protein-losing nephropathy

xiii. Immune-mediated diseases
1. ITP, IMHA, IMPA

xiv. Dermatologic manifestations

4. Pharmacological interventions during medical emergencies
   i. Cardiac arrest
   ii. Acid-base imbalances
   iii. Circulatory shock
   iv. Status asthmaticus
   v. Status epilepticus
   vi. Sepsis
   vii. Acute renal failure
   viii. Diabetic ketoacidosis
   ix. GI ulceration
   x. Acute liver failure
   xi. Hyperkalemia (eg, obstructed cat)
5. Drug-induced diseases, including common drug toxicoses
   i. Type A
   ii. Type B
6. Drug-Drug Interactions

Clinical Pharmacokinetics / Therapeutic Drug Monitoring (20 questions)

1. Calculation of pharmacokinetic parameters
2. Impact of factors (patient, drug or disease) on clinical pharmacokinetics
3. Design of the dosing regimen based on patient risk factors (including organ failure)
4. The use of therapeutic drug monitoring to optimize a dosing regimen
5. Pharmaceutical calculations including compounding calculations, design of dosing regimens

Last revised: December 2021

Research (20 questions)

1. Experimental design
    i. cross over and parallel study designs
    ii. animal model
    iii. inclusion/exclusion criteria
    iv. sampling schedule
    v. masking
    vi. replication
    vii. randomization
    viii. avoidance of bias
2. Randomized, controlled clinical trials
    i. Types of controls (historical, placebo, positive, etc)
3. Bioavailability studies
    i. Bioequivalence studies
    ii. Pharmacokinetic/dose determination studies
    iii. Pharmacodynamic studies
    iv. Effectiveness studies
    v. Dose proportionality studies
4. Data analysis (eg, drug quantification , pharmacokinetic data interpretation, key parameters)
    i. Statistics
        1. Definitions
        2. Sample size calculation
        3. Appropriate statistical method selection and interpretation
5. Analytical methods
    i. Methods of detection (a working knowledge of the theory and application of GC, HPLC, MS, RIA, ELISA)
    ii. Bio-analytical method validation of an assay, including accuracy, precision, coefficient of variation, linearity, recovery, LOD, LOQ, and specificity;
    iii. Application of molecular techniques to clinical pharmacology
    iv. Pharmacogenomics
        1. Methods for detecting genetic variations
    v. Methods for quantitating response to drugs

Regulatory Considerations (20 questions)

1. The pathway to drug development and approval
2. The organization of FDA as it relates to drug use in animals
3. Target animal safety assessment
4. Pharmacovigilance
5. Issues unique to drug use in food animals including avoidance of drug residues
    i. Total residue, marker residue, comparative metabolism studies f. Issues related to the use / compounding of drugs
6. Extralabel drug use
7. Prescription writing
    i. DEA considerations (use/dispensing/storing)
    ii. Interpretation of package inserts/labeling

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8. Generic drugs