Module 7: Providing Pharmaceutical Care and Products for Dogs

EDUCATIONAL OBJECTIVES

Upon completion of this activity, participants should be better able to:

1. State the causes, risk factors, and clinical signs of canine hypothyroidism, hyperadrenocorticism, hypoadrenocorticism, diabetes, epilepsy, urinary incontinence, and cardiovascular disease.
2. Identify the drugs used most commonly for the chronic treatment of canine hypothyroidism, hyperadrenocorticism, hypoadrenocorticism, diabetes, epilepsy, urinary incontinence, and cardiovascular disease.
4. Recall important counseling points for owners of dogs undergoing chronic treatment for canine hypothyroidism, hyperadrenocorticism, hypoadrenocorticism, diabetes, epilepsy, urinary incontinence, and cardiovascular disease.

Post-Test/Rationale

1. Which statement regarding hypothyroidism in dogs is correct?
   A. Dogs are much more likely to suffer from hyperthyroidism than hypothyroidism.
   B. Levothyroxine approved for humans is used off-label for the treatment of hypothyroidism in dogs.
   C. The usual dosage of levothyroxine in dogs is similar to the usual dosage in humans.
   **D. Levothyroxine should not be administered concurrently with antacids or iron.***

   **Correct Answer: D**
   
   *Rationale: Both antacids and iron prevent levothyroxine from being absorbed into the bloodstream.*

2. Which of the following statements regarding treatment of canine hyperadrenocorticism is correct?
   A. The most common presentation of hyperadrenocorticism in dogs is adrenal-dependent disease.
   B. **Trilostane is FDA-approved for use in dogs and is the drug of choice for treating canine hyperadrenocorticism.***
   C. Mitotane approved for humans is used off-label to treat canine hyperadrenocorticism and is the drug of choice.
   D. Ketoconazole is considered to be as effective as trilostane or mitotane for the treatment of canine hyperadrenocorticism.

   **Correct Answer: B**
   
   *Rationale: Trilostane is FDA-approved for use in dogs (Vetoryl) and is the drug of choice.*
3. During the high-dose induction phase of mitotane therapy, dogs are considered to be “induced” when water consumption is:
   A. <50 mL/kg/day.
   B. <80 mL/kg/day.***
   C. <100 mL/kg/day.
   D. <100 mL/kg/day.

   **Correct Answer: B**
   *Rationale: Dogs are considered to be “induced” when appetite returns to normal and water consumption is <80 mL/kg/day.*

4. Which of the following drugs is prescribed as an alternative to desoxycorticosterone pivalate (DOCP) for the treatment of hypoadrenocorticism in dogs?
   A. Fludrocortisone.***
   B. Fluticasone.
   C. Prednisolone.
   D. Prednisone.

   **Correct Answer: A**
   *Rationale: DOCP is relatively expensive, and therapy becomes even more expensive if the owner cannot manage to give injections at home and must make monthly visits to the veterinarian. Oral fludrocortisone acetate is an alternative to DOCP in these cases.*

5. Which of the following insulins is FDA-approved for use in dogs with diabetes?
   A. Insulin detemir.
   B. Insulin glargine.
   C. NPH insulin suspension.
   D. Porcine insulin zinc suspension.***

   **Correct Answer: D**
   *Rationale: A formulation of porcine insulin zinc suspension (Vetsulin) is FDA-approved for use in dogs (and cats).*

6. Which of the following drugs used for the treatment of canine idiopathic epilepsy must be compounded?
   A. Gabapentin.
   B. Phenobarbital.
   C. Potassium bromide.***
   D. Zonisamide.

   **Correct Answer: C**
   *Rationale: There currently are no FDA-approved commercial potassium bromide products for humans or animals, including the widely marketed KBroVet tablets. USP has developed a validated compounded preparation monograph for potassium bromide oral solution 250 mg/mL.*
7. Which of the following statements regarding the treatment of status epilepticus in dogs is correct?
   A. Diazepam injectable solution is administered rectally for the treatment of status epilepticus.***
   B. Dog owners should pre-draw doses of diazepam or midazolam into syringes so they are ready in the event of status epilepticus.
   C. Midazolam can be used for the treatment of status epilepticus, but is has a slower onset of action than diazepam.
   D. Status epilepticus is a veterinary emergency that must be treated by a veterinarian.

   **Correct Answer: A**

   **Rationale:** Both diazepam injectable solution and midazolam injectable solution are used for the treatment of status epilepticus or cluster seizures in dogs. Diazepam solution is administered rectally.

8. Which of the following pairings of drug and patient does **not** reflect appropriate therapy for canine urinary incontinence?
   A. Diesthylstilbestrol for a male dog with urinary incontinence.***
   B. Estriol for a female dog with urinary incontinence.
   C. Phenylpropanolamine for a female dog with urinary incontinence.
   D. Phenylpropanolamine for a male dog with urinary incontinence.

   **Correct Answer: A**

   **Rationale:** Diesthylstilbestrol is a synthetic estrogen that should not be used in male dogs or pregnant female dogs.

9. According to the American College of Veterinary Internal Medicine consensus classification of heart disease and heart failure, a dog with heart enlargement and symptoms of congestive heart failure is in:
   A. Stage A.
   B. Stage B2.
   C. Stage C.***
   D. Stage D.

   **Correct Answer: C**

   **Rationale:** Dogs in Stage C have a structural abnormality and current or previous clinical signs of heart failure caused by canine chronic valvular heart disease.

10. Which of the following statements about drug therapy for canine chronic valvular heart disease is correct?
    A. Digoxin is the drug of choice for treating congestive heart failure in dogs.
    B. Hydrocodone bitartrate is FDA-approved for use as an antitussive in dogs.
    C. Pimobendan is a positive inotrope that is FDA-approved for use in dogs but not in humans.***
    D. Spironolactone approved for humans may be used off-label for diuresis in dogs.
Correct Answer: C
Rationale: Pimobendan is a positive inotrope unique to veterinary medicine. Digoxin is used as an inotrope in dogs with congestive heart failure primarily when financial constraints exist. Hydrocordine bitartrate approved for humans is used off-label for cough suppression in dogs. Spironolactone is used for aldosterone antagonism (not diuresis).