Disease and Prevention
Lesson VI

OBJECTIVES/RATIONALE

To provide quality health care in veterinary medicine it is important to have basic knowledge of common diseases that occur in domestic animals. The student will investigate the diagnosis, treatment, and prevention of animal diseases.

TEKS 121.5 1A, 1B, 1E, 2A, 3F TAKS ELA 1, 3, 4, 5

KEY POINTS

I. Signs of Disease - General symptoms of disease can include:
   A. Animal is less alert
   B. Animal is less active or responsive
   C. Eyes may appear dull
   D. Coat may be dull or rough
   E. Skin is less elastic
   F. Reduced appetite
   G. Discolored mucous membranes (may be pale, red, or bluish)
   H. Serous or watery discharges, such as. Diarrhea, bloody feces, or urine
   I. Purulent (containing puss) discharge from eyes or nose
   J. Dry, cracked nose when normally wet (dogs, cats, and cattle)
   K. Febrile (hyperthermic) or hypothermic temperature
   L. Increased or weakened pulse
   M. Increased or labored respirations
   N. Trembling, shaking, or shivering
   O. Open sores or wounds
   P. Unusual swelling of the body

II. Disease-Causing Factors
   A. Bacterial Disease – bacteria invade the body and cause infection and disease
      1. bacteria - procaryotic
         a. bacteria are single-celled microorganisms that lack a true nucleus or other organelles, such as mitochondria or lysosomes
         b. bacteria reproduce by cell division about every 20 minutes
      2. antibiotics
         a. chemical substances produced by microorganisms that kill or prohibit the growth of other microorganisms – Penicillin
         b. Some bacteria are resistant to some antibiotics
      3. Bacterial infection can be either the primary pathogen or the secondary pathogen leading to disease in animals
         a. The primary pathogen is the original cause of the disease
         b. A secondary bacterial disease develops as a result of another problem, such as a primary viral infection, an injury to tissues, or stressful situations

B. Viral Disease
    1. virus
        a. A non-living acellular infectious agent consisting of a piece of genetic material, either DNA or RNA, surrounded by a protein coat.
        b. Infects and relies on a host cell's biochemical machinery to reproduce viral particles.
    2. Viruses are the causative agents for many animal diseases
        a. There are generally no drugs designed to kill viruses in the body
        b. Antibiotics are often given during a viral infection to prevent or treat any secondary bacterial infections
    3. Veterinary care for viral infections relies on
        a. prevention through vaccination
        b. supportive care of the symptoms associated
C. Fungal Diseases
    1. Fungi
        a. A group of organisms marked by the absence of chlorophyll, the presence of a rigid cell wall, and reproduction by means of spores
        b. Mushrooms, yeast, molds, etc.
        c. Are found in the air, soil, and water, but relatively few species cause disease and they are seldom fatal.
    2. Mycotic infections – infections caused by fungi
        a. Dermatophytosis (ringworm)
            (1) a fungus that infects the skin of dogs, cats, sheep, horses, goats, cattle, pigs, and humans
            (2) transmission is by direct contact
            (3) symptoms include round, raised areas or hair loss and redness
        b. Dermatophilosis (rain gall)
            (1) A skin disease found in horses, sheep, cattle, and goats
            (2) Is the effect of warm, humid conditions and is common during the rainy season
            (3) Manifested by raised, crusty lesions, scabs, and clumps of hair loss
            (4) Found on the chest, back, and hips
        c. Aspergillosis and histoplasmosis
            (1) Systematic fungal diseases that infect the body systems of animals
            (2) Serious, life-threatening diseases that can result in severe tissue damage
D. Parasitic Diseases
    1. parasites
        a. plants or animals that live on or in a host at the expense of the host
        b. the host is harmed in some way
        c. serve as vectors (animal that transmits a disease) for spreading disease from animal to animal
        d. two groups
            (1) ectoparasites (external)
                (a) live on the outside of the body of the host – cause infestations
                (b) can have a detrimental effect on an animal's health due to

(i) tissue damage
(ii) stress
(iii) blood loss
(iv) annoyance

(c) may transmit disease to the animal
(d) horseflies, stable flies, mosquitoes, fleas, ticks, mites, and lice

(2) endoparasites – live inside the body of the host
(a) include the larvae stages of the botfly, heartworms, tapeworms, roundworms, flukes, and protozoa
(b) may cause diseases with severe organ damage and clinical signs
(c) fecal specimens are prepared for examination to identify parasites or ova
(d) veterinary workers need to be careful when handling specimens as the parasites may invade humans

e. Tapeworms
(1) Characterized by a head equipped with hooks and suckers for attaching to the intestinal wall of the host
(2) Bodies consist of a series of segments that will be filled with eggs - Segments, called proglottids, vary in number from a few to hundreds
(3) The adult lives in the host's small intestine

f. Hookworms
(1) Round helminthes which attach to the lining of the small intestine by means of a hooklike structure
(2) The female lays eggs, which pass from the body of the host in feces
(3) On the ground, under favorable conditions, the eggs develop into larvae
(4) The larvae may be ingested, may penetrate the skin, or may be consumed by puppies through the mother's milk
(5) Larvae migrate to the small intestine.

g. Roundworms
(1) Ascarids do not attach but swim freely in the small intestine and stomach of the host.
(2) The female lays eggs that are passed in the feces
(3) When the eggs are ingested, the larvae hatch in the intestine. They penetrate the intestine wall, enter the bloodstream and are carried to the liver. From the liver, they move into the lungs and up the bronchial tubes to return to the digestive system. There they mature and lay eggs and complete the cycle.
(4) In sever infections they block the digestive tract.

h. Whipworms
(1) Consist of a long, slender anterior portion and a thickened posterior that makes up about one-third the animal's length
(2) Inhibit the cecum of the host as adults
(3) The female lays eggs that are passed in the feces
(4) Eggs have thick shells with plugs at each end and require a warm, moist environment to become infective

(5) Animals ingest the eggs that develop into larvae in the jejunum of the small intestine. Development is completed in the cecum where the adults will live, lay eggs, and complete the cycle.

III. Laboratory Procedures

A. Methods of Collection from Various Sites

1. ear
   a. clean the area to remove excess dirt and wax
   b. use a swab to go deep into the ear canal without touching or contaminating the swab
   c. place the specimen on appropriate media
2. eye
   a. retract the lid
   b. swab the conjunctiva gently
3. suppurative wound or pyodermia
   a. clean the area around the collection site
   b. use nondisinfectant soap to remove surface contaminants
   c. swab the lesion to collect the specimen
4. urinary samples
   a. collected by catheterization or by cystocentesis
   b. use sterile equipment and sample container
5. Mastitis
   a. Worker should wash and dry his/her hands
   b. Cleanse the mammary glands or udder with a disinfectant soap
   c. The orifice of the teat should be swabbed with a 70 percent alcohol and allowed to dry
   d. Carefully expel milk into a sterile collecting vial equipped with a top
   e. Collect a milk sample from each teat – collect mid-stream samples, not the first milk expelled, by moving the vial into stream of milk
   f. label separately to determine the extent of infection
6. Metritis
   a. May accompany Mastitis, or it may exist alone
   b. To collect specimens from the uterus
      (1) Cleanse and disinfect the external genitalia
      (2) Carefully insert a sterile speculum through the cervical opening into the uterus
      (3) Insert a sterile swab into the uterus and turn it to collect a sample
      (4) Remove the swab, place it in a sterile tube with a cover
   c. In some situations, especially chronic infections, biopsies may be more advantageous for diagnosis.
7. Septicemia
   a. Locate a site for blood collection
   b. Cleanse the area with disinfectant and allow it to dry
   c. Collect the blood sample using a sterile needle and syringe
   d. Place sample into culture media
8. Necropsy specimens for bacterial or fungal studies

a. May be requested by veterinarian when an autopsy or postmortem is conducted.
b. Use sterile instruments and aseptic technique
c. Excise the selected site and take samples from the cuts with swabs

B. Culturing Bacteria and Fungi
1. a swab may be used in the field to collect specimens from horses or other livestock
   a. place the swab into a tube of sterile broth with a screw cap
   b. cap the tube firmly to prevent drying and spilling and should be transported in an upright position
2. in the clinic or office, the specimen may be collected on a swab and streaked directly onto culture media.
3. (See Art of Streaking Lesson)

C. Preparing Smears and Stains
1. Once the organisms have been grown, they should be placed on a slide and stained for identification
2. To prepare a smear
   a. Place a drop of sterile water on a slide
   b. Heat a wire inoculating needle to redness in the cone of a Bunsen burner flame. Cool.
   c. Lift the Petri dish lid with one hand, and remove a sample of the organisms with the loop held in the other hand. Close lid.
   d. Add the sample to the water on the slide and mix, spreading thin, to form a one-inch circle. Be sure to flame the loop before setting it aside.
   e. Air dry.
   f. Fix organisms to the slide by flaming rapidly about three times. Use tongs or place index finger along slide edge to avoid overheating and cracking slide.
3. There are many types of bacterial stains
   a. Some are used for specific organisms
   b. Others are used to show details of structure
   c. Gram's stain is most often used to differentiate bacteria
      (1) "gram-positive" – bacteria have the characteristic to stain a deep purple
      (2) "gram-negative" – bacteria have the characteristic to stain red
   d. Gram Stain Lesson
4. Bacteria have many varied shapes – (Micro Handout)
   a. Coccus (cocci, pl.) is round
      (1) Cocci in grapelike clusters are termed staphylococci
      (2) Cocci in chains are termed streptococci
      (3) Cocci in pairs are termed diplococci
      (4) Small, single cocci are called micrococci
   b. Bacillus (bacilli, pl.) is rod-shaped or fusiform that develops spores and may have flagellum for motility.
   c. Curved or spiral forms vary in shape
      (1) Spirochetes are flexible and corkscrew-shaped bacteria

(2) Vibrios are comma-shaped bacteria
(3) Spirilla are rigid spirals

5. Fungi also have varied shapes
   a. Yeast - exists as small single cells that produce buds
   b. Other forms grow as multicellular filaments (called hyphae), that produce spores contained in spore cases
   c. These plantlike organisms lack chlorophyll and so must exist as saprophytes or parasites
   d. Fungi are more easily identified stained – the staining technique most often used in called the Lacto-Phenol Cotton Blue stain
      (1) Place a small drop of this stain on a slide
      (2) Use a flamed needle, pick up fungus from an agar plate or directly from a lesion, and place it into the drop of stain.
      (3) Place a cover slip over the stained fungus and allow it to stand for 10 minutes
      (4) Examine with the low-power objective of the microscope.

D. Urinalysis-If the urinary system is functioning normally, it eliminates liquid metabolic wastes and regulates the water balance and the acid-base balance in the body.

1. Collection
   a. Catching a sample as the animal voids
      (1) Using a clean, disposable plastic cup, collect the middle portion of the voided urine
      (2) The first morning voiding is preferred
   b. Catheterization
      (1) Select the smallest diameter catheter that can be used
      (2) Lubricate the tip
      (3) Clean the animal's periurethral area with mild soap and water
      (4) Gently insert the catheter into the urethra and collect the urine as it drains from the bladder into a clean, sterile container.
   c. Cystocentesis – done by surgically puncturing the urinary bladder
      (1) Cleanse and prepare antiseptically, the abdominal skin at the chosen site
      (2) The bladder is palpated and held in place
      (3) A sterile needle with attached syringe is inserted through the abdominal wall and into the urinary bladder
      (4) As much urine as possible is withdrawn
      (5) The needle is removed and the puncture wound treated
   d. Physical expression – usually used when an animal is anesthetized for surgery
      (1) The bladder is located by palpation
      (2) Steady, continuous pressure is applied gently to the bladder until urine is expelled.
2. Appearance
   a. Color

(1) Normal color ranges from nearly colorless to very pale yellow to dark amber
(2) Abnormal colors such as bright yellow, brown, green, red, or blue should be noted
(3) Some urine may have a milky white appearance due to large quantities of bacteria or pus.

b. Turbidity
(1) If the urine is transparent it is termed clear
(2) Pus cells, bacteria, and some crystals will cause an abnormal, cloudy appearance
(3) Horse urine normally appears turbid at voiding
(4) Sexual secretions may also give a flocculent or cloudy appearance

c. Foam
(1) Note the color of the foam on urine
(2) Is there a limited amount or normal white foam, or excessive foam that is slow to disappear

d. Smell
(1) Fresh normal urine has a faint smell
(2) Report a strong, sweetish smell or an ammonia scent from fresh urine
(3) Report any strong odor
(4) If a specimen is allowed to stand, it may develop an ammoniacal or fetid odor with the breakdown of components

3. Specific Gravity (SG) – compares the weight of a substance to an equal weight of water, using the water's weight as 1.000
a. Measure specific gravity
(1) Fill the urinometer cylinder until the urine is about one inch from the top
(2) Insert the urinometer float with a gentle spin. It must not touch the sides when being read
(3) Read the SC value from the number at the bottom of the urine meniscus as shown on the stem of the float
(4) Record the value

b. The normal range for all species is 1.010 to 1.080
c. Dissolved substances, such as protein or sugar, will tend to raise the SG

4. Chemical analysis – determine the presence and amount of a given substance in urine
a. Substances most often tested for
(1) Proteins
(2) Glucose
(3) Ketones
(4) Hemoglobin
(5) Bile

b. Substances may be evaluated rapidly by dipping a reagent-impregnated strip into the specimen and matching it to a chart showing standard color values

c. The pH may be determined by dipping a stick and matching it to the color standard
d. Normal pH values for dogs, cats, and calves range from 4.5 to 7.5. Livestock ranges are from 7.0 to 8.0

5. Urinary sediment
a. Fresh urine specimen is centrifuged for three-five minutes at 600 to 1,000 rpm.
b. The supernatant fluid is discarded or used for chemical testing
c. The sediment is placed on a glass slide for microscopic study
d. Bacteria, yeast, casts, crystals, and cells may be reported as so many per low power field
e. Methylene blue stain may be added to the sediment to aid in the visualization of the elements present
f. Presence of mucous threads, , sperm cells (from males), epithelial cells (from females), and certain crystals may be present, but are considered normal

IV. Zoonotic Diseases- diseases that can be transmitted from animals to humans
A. Brucellosis
B. Cat scratch fever
C. Equine encephalomyelitis
D. Leptospirosis
E. Lyme disease
F. Rabies
G. Ringworm
H. Rocky Mountain spotted fever
I. Salmonellosis
J. Tapeworm
K. Toxoplasmosis
L. Trichinosis

V. Clinical Signs of Common Diseases
A. Canine Disease
1. Canine distemper
a. Caused by a virus – it is one of the most common diseases seen in dogs
b. Symptoms
(1) Fever
(2) Coughing
(3) Anorexia
(4) Depression
(5) Diarrhea
(6) And a purulent discharge from the nose and eyes
(7) In advanced cases – hard pads

2. Infectious canine hepatitis (ICH)
a. An acute, highly contagious disease caused by a virus that infects and damages the tissues of the liver
b. Symptoms
(1) Fever

(2) Depression
(3) Anorexia
(4) Diarrhea
(5) Polydipsia – excessive thirst
(6) Lengthened blood clotting time
(7) Corneal edema

3. Canine Parvo Virus
   a. Caused by virus – highly contagious, rapid onset, extremely devastating disease of the gastro-intestinal tract
   b. Spread by contamination (feces)
      (1) Soil
      (2) Animal to animal
      (3) Possibly air borne
   c. Symptoms
      (1) Fever
      (2) Depression
      (3) Anorexia
      (4) Vomiting
      (5) Severe, profuse diarrhea – ending in dark tarry stool with distinct odor
      (6) Dehydration
      (7) Anemia
      (8) Death if not treated aggressively
4. Leptospirosis
   a. Causes by a type of bacteria known as spirochetes
   b. Is spread by drinking urine-contaminated water
   c. Symptoms
      (1) Fever
      (2) Anorexia
      (3) Weakness
      (4) Bloody emesis - vomiting
      (5) Jaundice
      (6) Polydipsia
      (7) Polyuria - (excessive urination
5. Infectious tracheobronchitis (kennel cough)
   a. Extremely contagious viral disease
   b. Often appears in animals boarded among or with many other animals
   c. Symptoms
      (1) Pronounced, unproductive cough
      (2) Gagging
      (3) Depression
      (4) Low-grade fever
6. Internal Parasitic Disease – internal parasites
7. Hookworms
   a. Heavy infestations cause death in puppies
   b. Symptoms
      (1) Diarrhea with bloody tinges

(2) Tarry stools

8. Roundworms
    a. Symptoms
        (1) Lack of growth
        (2) Development of a potbelly
        (3) Coat hair is rough
        (4) May vomit worms
9. Tapeworms
    a. Symptoms
        (1) General irritability
        (2) Unthrifty appearance
        (3) Intermittent diarrhea
        (4) Worm segments or egg masses may be found in the feces or around the anal area
10. Whipworms
    a. Symptoms
        (1) Weight loss
        (2) Intermittent diarrhea
        (3) Fresh blood may appear in the feces
        (4) Dull hair coat
11. Canine heartworm
    a. Symptoms
        (1) Gradual weight loss
        (2) Cough aggravated by exercise
        (3) Easily overexerted
        (4) Display dyspnea
        (5) May become unconscious periodically

B. Feline Diseases
    1. Feline panleukopenia (cat typhoid, feline distemper, feline infectious eneritis)
        a. Highly infectious viral disease that can be fatal
        b. Symptoms
            (1) Vomiting
            (2) Anorexia
            (3) Fever
            (4) Diarrhea
            (5) Depression
            (6) Severe dehydration
    2. Feline leukemia (FeLV)
        a. Viral disease transmitted through discharge of urine, feces, saliva, milk, nasal secretions, and blood sucking insects
        b. Affects the hematopoietic tissues (blood production tissues) and leads to a compromised immune system
        c. Various types of tumors in body regions and malignant changes in blood-forming cells
        d. Can be prevented by vaccination
    3. Feline viral rhinotracheitis (FVR)

a. Most common of all groups of respiratory infection in cats – it is an extremely contagious viral infection which is airborne and spreads from sneezing
b. Symptoms
(1) Conjunctivitis – inflammation of the mucous membranes of the eye
(2) Purulent lacrimation – secretion and discharge of tears
(3) Fever
(4) Nasal discharge accompanied by sneezing

4. Feline Immunodeficiency Virus (FIV)
a. A virus that attacks a cat's immune system, impairing ability to fight infections, similar to AIDS in people (but not transmissible to humans)
b. Spreads primarily through bite wounds
c. Symptoms
(1) Dull hair coat
(2) Slow or non-healing wounds
(3) Gingivitis
(4) Chronic skin infections
(5) Enlarged lymph nodes
d. No treatment, but use of immune stimulants can prolong life and reduce infections.

C. Equine Diseases
1. *Rhodococcus equi* pneumonia (*R. equi*)
a. Acute respiratory infection affecting foals between two weeks and three months, but rarely those over four months old.
b. Symptoms
(1) High fever
(2) Minimal cough
(3) Harsh lung sounds
c. Prevalent in warm, dry, dusty areas of the country and most common in late spring and early summer

2. Strangles
a. A bacterial disease caused by *Streptococcus equi* which is an extremely contagious respiratory disease
b. Symptoms
(1) Painful swelling in the lymph nodes, around neck, and under the mandible – swelling may rupture and drain purulent exudate.
(2) High fever
(3) Depression
(4) Poor appetite
c. Animals should remain isolated for six weeks following recovery since it is very contagious

3. Equine infectious anemia (EIA)
a. Viral disease characterized by decreased PCV and platelet count
b. Symptoms
(1) Anemia
(2) Fever

(3) Weight loss
c. Biting flies most frequently transmit this disease
d. Infected horses remain carriers for the rest of their lives
e. Reportable disease to State Authorities
f. Due to eradication efforts positive animals are removed from farms (euthanized)

4. Encephalomyelitis – sleeping sickness
   a. Includes a group of closely associated viruses
      (1) EEE (Eastern Equine Encephalomyelitis)
      (2) WEE (Western Equine Encephalomyelitis)
      (3) VEE (Venezuelan Equine Encephalomyelitis)
   b. Contagious, mosquito-transmitted disease that results in a rapidly progressive, highly fatal neurological illness
   c. Symptoms
      (1) Aimless wandering
      (2) Fever
      (3) Circling
      (4) Convulsions
      (5) Paralysis
   d. Rabies and "sleeping sickness" may mimic each other – the sick animal should be tested to confirm diagnosis
5. Colic
   a. An abdominal pain originating from the abdominal tract
   b. Symptoms
      (1) Loss of appetite
      (2) Lying down and rising frequently
      (3) Violent rolling
      (4) Pawing the ground
      (5) Sweating
      (6) Trembling
      (7) High heart rate
      (8) Kicking at the abdomen
      (9) Stretching
      (10) Turning the head frequently to look back at the abdomen
   c. Treatment is either medical (drug and/or fluid therapy) or surgical, though most colic resolves without surgery
6. West Nile Virus
   a. Viral disease which exhibits similar signs and symptoms of encephalomyelitis
   b. Spread in wild bird population by mosquitoes and horses infected aberrantly via mosquitoes
   c. Symptoms
      (1) Rapid onset limbataxia (hind limbs most predominant)
      (2) Muscle fasciculstions
      (3) Some exhibit hyper-excitability
      (4) Recumbancy and unable to rise

d. Prognosis
e. Recumbant horses – poor
f. Horses remaining standing with proper treatment usually fully recover

D. Bovine Disease
1. Bovine viral diarrhea (BVD)
a. Contagious viral disease
b. Symptoms
(1) Fever
(2) Depression
(3) Cough
(4) Discharge from the nose and mouth
(5) Tachypnea – increased respirations
(6) Tachycardia – rapid heart rate
(7) Oral lesions
(8) Development of diarrhea that lasts for two to four days
c. Cattle with acute BVD die within two days
2. Brucellosis
a. Caused by the bacteria *brucella*, occurs most often in cattle, but may also infect swine, dogs and horses
b. Symptoms
(1) Pregnant female – aborts
(2) Male – develops inflammation of the genitalia
(3) Infertility may result
3. Blackleg
a. Caused by the bacterium *Clostridium chauvoli*
b. Symptoms
(1) Fever
(2) Depression
(3) Hot and painful swelling in the
(a) Hip
(b) Shoulder
(c) Chest
(d) Back
(4) As the edema spreads, the skin cools with poor circulation
(5) Prostration and tremors appear
(6) Crackling of skin upon palpation due to gas under skin
c. Death occurs in 12 to 48 hours
4. Infectious bovine rhinotracheitis (IBR)
a. Viral disease that invades the respiratory system of susceptible calves
b. Symptoms
(1) Fever
(2) Anorexia
(3) Weight loss
(4) Cough
(5) Conjunctivitis
(6) Nasal discharge from red, inflamed nostrils

c. Animals usually recover spontaneously in four to five days
d. Weakens immune system allowing secondary infection

5. Bovine respiratory disease (shipping fever)
   a. Caused by the bacteria Pasteurella, generally occurs in young cattle subjected to stressful situations, such as shipping
   b. Symptoms
      (1) Fever
      (2) Coughing
      (3) Shallow breathing
      (4) Discharge from the nose and eyes
      (5) Pneumonia

VI. Prevention of Disease

A. Kennel and stall management
   1. cages and kennels must be
      a. cleaned
         (1) removal of waste, manure, and organic material
         (2) shovels or scrapers may be used to remove bulk waste
         (3) hose, sponge or mop area and wash with detergent solution
      b. disinfected
         (1) used to kill harmful germs
         (2) make sure there is no residue of dirt and waste because this will make it difficult for the disinfectant to contact and destroy germs
      c. dried
         (1) air dried
         (2) fan or electric drier
      d. clean bedding must be provided
         (1) large animals
            (a) straw
            (b) sand
            (c) wood shavings
         (2) small animals -
            (a) newspaper
            (b) commercial absorbent paper
         (3) using bedding for waste absorption makes cleaning cages easier and helps prevent odors
   2. Feeding containers must be cleaned and disinfected daily
   3. Commercial deodorants are available for use in veterinary facilities
   4. The temperature where animals are housed should be regulated to prevent extreme changes
   5. Provide adequate ventilation of the pens and cage areas to change the air frequently in both summer and winter.

B. <u>Vaccination</u>
   1. The most effective method of preventing disease
      a. The introduction of an attenuated or killed microorganism into an animal's body to produce a specific immunity
      b. Forms of Vaccines

(1) Oral
(2) Injectable
(3) Intranasal sprays

2. Vaccination schedules
   a. Puppies
      (1) 8 to 10 weeks
         (a) DHLP
         (b) Corona
         (c) Parvo
      (2) 12 to 14 weeks
         (a) DHLP
         (b) Corona
         (c) Parvo
      (3) 16 to 18 weeks
         (a) DHLP
         (b) Corona
         (c) Parvo
         (d) Rabies
      (4) Varied schedules for Bordetella (Kennel cough) – minimum of two injections
      (5) Lymes vaccines – controversial at this time
   b. Kittens
      (1) 6 to 8 weeks
         (a) FVRCP
         (b) FeLV
      (2) 10 to 14 weeks
         (a) FVRCP booster
         (b) FeLV booster
      (3) Rabies – 12 weeks or older
      (4) Boost Vaccinations Yearly
         (a) FVRCP
         (b) FeLV
         (c) Rabies
   c. Cats – Adult – at the present time, there is a controversy on the frequency of vaccinations in adult cats
      (1) FVRCP
      (2) FeLV
      (3) Rabies
   d. Horses – due to the varied uses and types of horses in the equine industry it would be advantageous to consult the veterinarian in the area working as the needs and types of vaccine programs.
   e. Cattle – There are many types of cattle vaccination programs all depending on location, use, history, etc. All vaccine programs are set up on an individual basis.

ACTIVITIES

I. Complete Immunization Exercise at Work-based Learning facility.
II. Research and report on a disease focusing on prevention methods.

MATERIALS NEEDED

Quiz

ASSESSMENT

Disease and Prevention Quiz
Case Study Rubric
Writing Rubric

ACCOMMODATIONS

For reinforcement, the student will list common diseases and the causative agent associated with a specific species.

For enrichment, the student will research and develop a case study on a zoonotic disease and report to the class

REFLECTIONS

Immunization

Objective: To become familiar with immunizations available at work place.

Directions: Complete the following.

1. List the species of animals that receive immunizations at your place of employment.

2. List a type of vaccine given to each species. Indicate the vaccines and species.

3. Select one of the vaccines used and complete the following information.
   a. Product name

   b. Manufacturer

   c. Instructions for use

   d. Warnings or contraindications

   e. Storage directions

   f. Expiration date

Disease and Prevention
TEST

1. List the general symptoms of disease.

2. What are bacteria?

3. What is a virus?

4. List the characteristics of fungi.

5. Differentiate between endoparasites and ectoparasites.

6. Where do parasites live, grow, and reproduce?

7. How may fecal samples be collected?

8. _____ are round helminths that attach to the lining of the small intestine by means of a hook-like structure.

9. _____are flatworms, characterized by a head equipped with hooks and suckers for attaching to the intestinal wall of the host.

10. _____ consist of a long, slender anterior portion and a thickened posterior that makes up about one-third the animal's length.

11. _____ swim freely in the small intestine and stomach of the host.

12. Name ways that parasites may damage the host.

13. _____ is cocci in pairs.

14. _____ is small, single cocci.

15. _____is cocci with grapelike clusters.

16. _____ is cocci in chains.

17. _____ are comma-shaped bacteria.

18. _____ is rod-shaped or fusiform, and may have spores located at one end or in the middle.

19. _____ are rigid spirals.

20. _____ are flexible and corkscrew-shaped bacteria.

21. What is the function of the urinary system.

22. List five phases of urinalysis.

23. Describe how to collect a urine specimen as the animal voids. When is the best time to collect the specimen?

24. Give the normal condition of urine for each of these aspects of its appearance.
    a. color—
    b. turbidity—
    c. color of foam—
    d. odor—

25. _____ is transmitted by the ingestion of raw or inadequately cooked pork or other infected meat.

26. Lyme disease can be transmitted by what?

27. _____ is transmitted by ingestion of undercooked poultry, beef, port, or crustaceans contaminated by fecal wastes.

28. _____ is transmitted by direct contact with saliva or mucus discharges.

29. _____ is transmitted by direct contact with infected ticks.

30. Give two means of disease prevention.

31. List four major steps in cleaning kennels and cages.

32. What is the most effective method of disease control?