

# Teacher Key for New and Revised Lessons

## Chapter 2 - Lesson 3 (New)

### Employee Communications

1. Soft skills are non-technical personal interaction between individuals.
2. Three forms of nonverbal communication include body language, facial expressions, and behavior.
3. Studies indicate that 80 % of communication is nonverbal.
4. Miscommunication may result when the body language does not agree with the verbal communication.

## Chapter 2 - Lesson 4 (New)

### Clinic Infectious Disease Control

1. List FIVE of the following in any order:
  - Working with infected body fluids
  - Treating and caring for sick animals
  - Cleaning cages or stalls
  - Handling carcasses
  - Surgical procedures
2. List FOUR of the following, in any order:
  - Hand hygiene
  - Barrier nursing precautions
  - Isolation
  - Disinfection

## Chapter 3 - Lesson 4 (New)

### Pain Recognition

1. Nociceptive and neuropathic.
2. Behavioral and physiologic responses.
3. Any FOUR of the following, in any order:
  - Vocalization
  - Silence
  - Guarding of the affected area or surgical site
  - Change in facial expression
  - Self-mutilation
  - Muscle rigidity or weakness
  - Restlessness
  - Reluctance to move
  - Personality changes
  - Dullness (slow to respond to handling)
  - Loss or decrease in food and/or water intake
  - Failure to groom
4. List THREE of the following, in any order:
  - Increased heart rate
  - Increased blood pressure
  - Irregular heart beat

- Increased respiratory rate
  - Shallow breathing
  - Pale mucous membranes
5. A patient in severe pain may howl, cry, or scream.
  6. Nursing care greatly improves the pain tolerance of most patients.

### **Chapter 7 - Lesson 5 (New)** Rehabilitation

1. Rehabilitation is the repair of an injured animal and treatment for disabilities caused by physical impairment.
2. Anatomy and physiology including orthopedics, skeletal system, neurology, mycology, cardiology, biomechanics, and pain management.
3. Injuries, long-term degenerative conditions, or recovery from surgical procedures.
4. Benefits include:
  - Patients become more mobile
  - Patients safely use painful limbs
  - Improved and prolonged quality of life
  - Manage acute pain
  - Increased fitness
  - Ambulatory assistance
5. Clinical services include:
  - Therapeutic exercise
  - Land treadmill
  - Manual therapy
  - Theraball
  - Massage therapy
  - Stretch therapy
  - Cold pack therapy
  - Moist heat therapy
  - Acupuncture
  - Neuromuscular electrical stimulation
  - Low-level laser therapy
  - Therapeutic ultrasound
  - Focused shockwave therapy
  - Pulsed electromagnetic therapy
  - Hyperbaric oxygen therapy
  - Ambulation carts, orthotic devices, prostheses
6. The purpose of therapeutic exercise is to reduce and manage pain, to bring a patient back to full health, and return them to their previous state.

### **Chapter 8 - Lesson 1 (Revised)** Fecal, Blood, & Urine Examinations

1. Erythrocytes.
2. Leukocytes.
3. Red.
4. Anticoagulant.
5. 15.
6. 24.

7. Packed cell volume.
8. Erythrocytes.

**Chapter 8 - Lesson 2 (Revised)**  
Bacteriologic Tests  
Activities Only

**Chapter 8 - Lesson 3 (Revised)**  
Radiology

1. All NINE of the following, in any order:
  - Remove anyone not needed
  - Everyone wears a lead apron and the animal holder wear lead gloves
  - Radiographically check gloves and apron
  - Use a cone
  - Direct beam to patient only
  - Install a filter
  - Cover table bottom with lead to protect feet
  - Keep hands out of the beam
  - Do not use fluoroscopy when radiography will do the job
2. Roll or drape apron over curved surface. Hang gloves or place on cans with both ends open inside the gloves.
3. Use a caliper to measure thickness. Use a technique chart with measurement figures to determine kV, mA, and exposure time settings.
4. A grid is a sheet of lead strips used between the animal and the cassette to prevent radiation from passing through.
5. Caliper.
6. Voltage meter (volt-meter).
7. Anterior.
8. Outer.
9. Lead apron.
10. Lead diaphragm.
11. F
12. F
13. T
14. T
15. F
16. T

**Chapter 8 - Lesson 4 (Revised)**  
Post-Mortem Examinations

1. Examination of a dead body to determine the cause of death. Post-mortem examinations provide information that help prevent and treat future cases.
2. All THREE of the following, in any order:
  - Convenience
  - Sanitation
  - Disposal of the carcass

3. One-piece coveralls, rubber gloves, and rubber overshoes.
4. Any FOUR of the following, in any order:
  - Straight-pointed blade knife (for cutting soft tissue)
  - Curved blade knife (cutting soft tissue)
  - Saw (cutting bone)
  - Chisels (cutting bone)
  - Wrecking bar (prying bones)

**Chapter 8 - Lesson 5 (Revised)**  
Special Examinations

1. To visually observe normal and abnormal conditions of internal tissues, bone joints, and hollow organs.
2. To visually observe images of normal and abnormal conditions of internal tissues and organs in motion.
3. To microscopically examine tissue for normal and abnormal conditions.
4. To visually observe images of temperature levels of tissue to determine normal and abnormal conditions.
5. C
6. A
7. D
8. E
9. B

**Chapter 10 - Lesson 1 (Revised)**  
Causes of Infectious Disease

1. Major differences between the five types of organisms include:
  - Viruses (small non-cellular organisms consisting mainly of genetic material)
  - Bacteria (tiny single-celled organisms)
  - Rickettsiae (bacteria-like organisms that can cause disease)
  - Fungi (single celled organisms that are larger than bacteria)
  - Parasites (arthropods, worms, and protozoa)
2. Worms and arthropods (naked eye). Fungi, bacteria, rickettsiae, protozoa, and mites (light microscope).  
Viruses (electron microscope).
3. All SEVEN of the following, in any order:
  - Bacteria
  - Viruses
  - Fungi
  - Rickettsiae
  - Helminths (worms)
  - Protozoa
  - Arthropods
4. All FIVE of the following, in any order:
  - Inclement weather
  - Overcrowding
  - Pollution
  - Commingling
  - Inbreeding
5. All FOUR of the following, in any order:
  - Immunizations
  - Husbandry

- Management
  - Crossbreeding
6. Primary and secondary causative agents (germs, parasites) invade diseased animals and worsen their condition. Secondary causative factors (inclement weather, poor husbandry) predispose healthy animals to disease and worsen the condition of diseased animals.

**Chapter 10 - Lesson 2 (Revised)**  
Infectious Diseases: Digestive System

1. Digestive system.
2. Rotavirus, coronavirus, canine parvovirus, feline panleukopenia, bovine viral diarrhea (BVD), and swine transmissible gastroenteritis (TGE).
3. Salmonellosis, enterotoxemia, and colibacillosis.
4. Nematodes, tapeworms, protozoa, and botfly larvae.
5. Eggs and segments.
6. Cysts or motile stages.
7. Malnutrition.
8. Clinically affected animals display obvious signs of disease such as anemia, diarrhea, and emaciation. These signs are not obvious in sub-clinical cases. Instead reduced performance may indicate the presence of sub clinical disease.

**Chapter 10 - Lesson 3 (Revised)**  
Infectious Diseases: Respiratory & Reproductive Systems

1.
  - a. Metritis is an inflammation of the uterus (womb) due to bacterial, viral, and protozoal infection.
  - b. Pyometra: If pus is present in a bacterial or protozoal metritis, the condition is called pyometra.
  - c. Mastitis is an inflammatory condition involving mammary glands or udder tissue and usually occurs during lactation.
  - d. Abortion is premature birth expelling of a fetus by a pregnant female.
  - e. Retained placenta is a condition when the placenta (afterbirth) is not passed after the birthing process.
2. Protozoal infections of the reproductive system include bovine neosporosis and bovine trichomoniasis.
3. Viral infections of the reproductive system include swine parvovirus, infectious bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD), swine pseudorabies, and equine rhinopneumonitis.
4. Bacterial infections of the reproductive system include brucellosis, leptospirosis, and campylobacteriosis.
5. Viral infections of the respiratory system include infectious bovine rhinotracheitis (IBR), equine rhinopneumonitis, equine influenza, swine influenza, canine distemper, feline viral rhinotracheitis (FVR), feline calicivirus (FVC), fowl infectious bronchitis, fowl infectious laryngotracheitis (LT), and avian influenza (AI).
6. Bacterial infections of the respiratory system include pasteurellosis in cattle, swine pneumonitis, feline pneumonitis, and canine infectious tracheobronchitis.
7. Parasite infections of the respiratory system include lungworms.
8. Sneezing (nasal passages), gagging (tonsils), coughing (lungs).
9. Viral respiratory disease.

**Chapter 10 - Lesson 4 (Revised)**  
Infectious Diseases: Integumentary System

1. Ectoparasites.
2. Heelflies.
3. Ear.
4. Tapeworm.
5. Mange.
6. Arthropods.
7. Rain gall: Exudative dermatitis with scabs. Typical lesions are raised, crusty lumps covered with hair that can be pulled off.  
Ringworm: Begins as focal alopecia (hair loss). These round areas of hair loss become scaly with circumscribed edges that may be raised and reddened. Pruritus may or may not be present.
8. Pyodema.
9. (a) Paintbrush lesions  
(b) Circumscribed lesions  
(a) Biting flies  
(a) Rain gall

**Chapter 10 - Lesson 5 (Revised)**  
Infectious Diseases: Cardiovascular System

1. a. Myocarditis is an inflammation of heart muscle.  
b. Endocarditis is inflammation of the heart lining (endothelium and valves).  
c. Pericarditis is an inflammation of the heart sac (pericardium).  
d. Lymphadenitis is an inflammation of the lymph nodes.  
e. Lymphagitis is an inflammation of the of the lymph vessels.
2. Heartworms (dirofilaria).
3. Parvovirus, encephalovirus, hepatovirus, lymphovirus, pneumovirus, and hemovirus.
4. Streptococcus, staphylococcus, salmonella, clostridium, borrelia, actinobacillus, and actinomyces.
5. Anaplasmosis, eperythrozoonosis, Rocky Mountain spotted fever, and ehrlichiosis.
6. Caseous lymphadenitis, streptococcal lymphadenitis, ulcerative lymphangitis, and streptococcus lymphadenitis.
7. Viral diseases.

**Chapter 10 - Lesson 6 (Revised)**  
Infectious Diseases: Musculoskeletal & Nervous System

8. a. Meningoencephalitis is an inflammation of the brain covering (meningitis).  
b. Encephalitis is an inflammation of the brain tissue.  
c. Meningitis is an inflammation of the brain covering.  
d. Myositis is an inflammation of muscle.  
e. Necrotic myositis is death of inflamed muscle.
9. Blackleg, blackgut, blackneck, and malignant edema.
10. Caprine arthritis and encephalitis (CAE), mycoplasmosis, and haemophilosis.
11. Rabies, equine encephalomyelitis, canine distemper and parvovirus, feline leukemia, swine pseudorabies, and CAE.
12. Tetanus and haemophilosis.
13. Equine protozoal myeloencephalitis (EPM), canine neosporosis, and toxoplasmosis .
14. Bovine spongiform encephalopathy and scrapie.
15. Cryptococcosis and coccidiodomycosis.

### **Chapter 10 - Lesson 7 (Revised)**

#### Infectious Disease: Special Senses & Generalized Conditions

1. Predisposing factors of ear infections include: small external opening of ear canal, excessive hair in the ear canal, flopped ears, and warm humid weather.
2. a. Enterotoxemia (toxins from bacteria absorbed in the intestines)  
b. Toxemia (toxins in the blood stream)  
c. Mucopurulent (mucus with pus)  
d. Gangrene (back, gaseous dead tissue)
3. Eyes - Keratoconjunctivitis, keratitis, and conjunctivitis.  
Ears - Otitis externa, and otitis interna.
4. Blackleg, blackgut, backneck, blackliver, malignant edema, tetanus, and botulism.
5. Aspergillosis, histoplasmosis, candidosis, blastomycosis, coccidioidomycosis, and sporotrichosis.

### **Chapter 13 - Lesson 1 (Revised)**

#### Sterilization

1. Eveywhere under normal conditions.
2. Sterilization destroys ALL microorganisms while antiseptics inhibit growth of microorganisms.
3. An ideal antiseptic prevents the growth of microorganisms and is harmless to the patient.
4. The major methods of sterilization are steam, chemical (gas) plasma, ionizing radiation, and cold chemical.
5. Temperature, pressure, and exposure time.
6. Pasteurization of milk.
7. Cold chemical sterilization.

### **Chapter 13 - Lesson 2 (Revised)**

#### Disinfection

1. Antibiotics are not effective in patients that become infected from enviromental contamination.
2. Organic debris inactivates the chemical disinfectant.
3. Soaking instruments in disinfectant for longer than an hour may cause the non-stainless metals to corrode.
4. a. Hand scrubbing - wear gloves and scrub.  
b. Ultrasonic cleaning - add appropriate solution and utilize heat process. After either cleaning, rinse, dry, polish, and package the instruments for sterilization.

### **Chapter 14 - Lesson 1 (Revised)**

#### Surgical Instrument & Terminology

1. a. Thumb forceps are for grasping, compressing, cutting, and pulling tissue.
2. b. Hemostats are used for clamping blood vessels and holding tissue.
3. c. Operating scissors are for cutting tissue ONLY.
4. d. An ecraseur is used to excise tissue by crushing.
5. e. A scalpel is used to excise and incise tissue by cutting.

**Chapter 14 - Lesson 2 (Revised)**  
Surgical Preparation & Procedures

1. The pre-operative preparation of the surgery room involves vacuuming, dusting, and disinfecting all surfaces. All equipment and supplies are sterilized and accessible. The surgery table is cleaned and disinfected. All drafts must be eliminated.
2. The assistant opens the outer layers of the surgical gown and sterile packs after the surgeon has scrubbed.
3. The surgeon arranges the instruments after he is gloved and gowned to prevent contamination.
4. Anyone entering the surgery room must have clean clothes and shoes. A cap, gown, and shoe covers should be worn by anyone approaching the surgical table.
5.
  - a. Sweep, vacuum, and mop floor. Vacuum, scrub, and disinfect table surfaces.
  - b. Clean and sterilize instruments, accessories, and supplies. Launder and autoclave gowns and drapes. Launder caps and masks. Clean and store equipment. Scrub and disinfect the surgery room.

**Chapter 14 - Lesson 3 (Revised)**  
Anesthesia

1. BOTH of the following, in any order:
  - Reduce the patient's sense of pain.
  - Provide restraint for the patient.
2. All FOUR of the following, in any order:
  - Animals differ in their reaction to anesthesia.
  - Animals differ in size and temperament.
  - Animals differ in anatomy and physiology.
  - Animals require restraint.
3. The first consideration in anesthesiology is the safety of the patient.
4. Local anesthetics, general anesthetics, and spinal anesthetics.
5. Isoflurane and sevoflurane are volatile anesthetic agents and are administered by inhalation. Propofol, ketamine, and dexmedetomidine are non-volatile anesthetic agents and are administered by intravenous injection.
6. Depth of anesthesia are monitored using observations of opposition, reflexes, respiration, muscle tone, and blood color.
7. All FOUR of the following, in any order:
  - Voluntary movement
  - Involuntary movement
  - Surgical anesthesia
  - Paralysis
8. Stage 4 (paralysis).

**Chapter 14 - Lesson 4 (Revised)**  
Preparing Hands & Field of Operation

1. Normal skin has a microbial population that can survive hand cleaning with antiseptics.
2. The surgeon's scrub removes dirt, oil, and microorganisms to minimize surgical contamination.
3. Before scrubbing their hands the surgeon and the assistant put on surgical caps, masks, and shoe covers.
4. Trim fingernail short. Wash the hands, arms, and under fingernails with antiseptic soap. Rinse with running water and dry with a sterile towel.
5. Clip and vacuum hair from the surgical site. Scrub the site with scrub solution and sterile gauze sponges. Apply germicide solution to the site.
6. Skin, oil glands, and hair follicles.



## **Chapter 14 - Lesson 5 (Revised)**

### Sterile Gloves & Gowns

1. Pull on the left glove (cuff down). Pull on the right glove (under cuff). Unfold cuffs over sterile sleeves.
2. The assistant ties the surgical gown while standing directly behind the surgeon.
3. The front chest area and from the wrist to elbow.
4. Open glove technique is used when the surgeon performs a minor procedure without cuffs of gloves over sterile sleeves.

## **Chapter 15 - Lesson 10 (New)**

### Records & Record Keeping

1. Production and financial records.
2. List FIVE of the following, in any order:
  - Individual animal inventories
  - Breeding and calving, farrowing, lambing, kidding, or foaling dates
  - Percent of cow, sows, ewes, or nannies bred
  - Percent of calf, pig, lamb, or kid crop born
  - Percent of calf, pig, lamb, or kid crop weaned and their average adjusted weaning weights
  - Carcass date
  - Number of bulls, boars, rams, or bucks per female
  - Net income and feed cost per head (or per pound of gain for feeder animals)
3. List FIVE of the following, in any order:
  - Animal, feed, equipment
  - Budgets (income and expenses associated with business activity)
  - Cash flow
  - Depreciation schedule (deduction for useful life of equipment and livestock)
  - Annual net income
  - Profit and loss statement
  - Net worth statement
4. Production records are kept to help determine production levels and profitability margin.
5. Financial records are kept in order to determine if production increases are cost effective based on the unit cost of production. Financial records can be used for income tax purposes, to obtain credit, and to guide changes in the livestock enterprise.

## **Chapter 16 - Lesson 6 (New)**

### Pullorum-Typhoid, Avian Influenza, & Exotic Newcastle Control Programs

1. Interstate or international movement of poultry or hatching eggs for exhibition or public sale is restricted to clean flocks. Testing is required before shipment.
2. The objective of the NPIP is to provide a cooperative program through which new technology can be effectively applied with respect to hatchery disseminated diseases.
3. To prevent the disease producers should increase biosecurity measures such as:
  - Keep poultry houses locked.
  - Fasten windows from the inside
  - Provide clothing to workers (shoes, boots, hats, gloves) keeping separate from clothes worn off the farm.
  - Change clothes before leaving the premises.
  - Prohibit workers from going near the poultry houses.

- Require visitors from going in or near the poultry houses.
  - Require visitors to wear protective clothing.
  - Scrub down vehicles entering the premises with disinfectant.
  - Clean and disinfect all coops, crates and other poultry containers and equipment before and after use
  - Send sick or dying birds for testing.
  - Post restricted signs at drive entrances.
  - Prevent birds from being brought back to the farm from slaughter channels, especially live-bird markets
4. The most effective way to eradicate END is to rapidly destroy the infected flock and impose a strict quarantine.

**Chapter 16 - Lesson 7 (New)**  
Bovine Trichomoniasis Control Program

1. To avoid the disease, practice sound biosecurity principles such as:
  - Maintain good fences.
2.
  - Buy only virgin bulls and heifers.
  - Keep the bull battery as young as possible.
  - Test purchased non-virgin bulls.
  - Consider artificial insemination.
  - Implement a defined breeding season.
  - Identify herd sires and record the breeding group.
  - Keep bulls in the same breeding groups.
  - Maintain small sire groups.
  - Do no commingle replacement cows with the existing herd during the first breeding season.
3. Infected bulls must be moved to slaughter because there is no effective treatment. The remaining bulls in the herd must be held and isolated from female cattle until tested negative. Allow sexual rest of 4 to 5 months for the infected cow.

**Chapter 16 - Lesson 8 (New)**  
Vesicular Stomatitis Control Program

1. Measure taken to prevent introduction of vesicular stomatitis in livestock operations include:
  - Control biting gnats and flies.
  - Keep stalls clean.
  - Keep horses stalled or under a roof at night to reduce their exposure to gnats.
  - Disinfect borrowed equipment or tools from livestock farms.
  - Disinfect boots of people from livestock farms.
  - Disinfect truck and trailer tires from livestock farms.
2. Measure taken to control vesicular stomatitis from an infected livestock farm is to quarantine animals on infected premises until 30 days after the last lesions are healed.

**Chapter 16 - Lesson 9 (New)**  
West Nile Encephalitis Control Program

1. Measure to prevent West Nile encephalitis in horses include:
  - Decrease exposure to mosquitoes by removing stagnant water where they breed.
  - Clean livestock watering troughs monthly.
  - Vaccinate horses against WNE.
2. The symptoms of disease (ataxia, depression and apprehension, weakness of limbs, partial paralysis, muscle twitching, and death) are similar to those of rabies in horses.

**Chapter 16 - Lesson 12 (New)**  
Carcass Disposal Regulations

1. To control the spread of disease and to protect public health.
2. The owner is responsible for proper disposal of their dead animals.
3. Disposal of diseased animals must take place within 24 hours after death.
4. Burning, burial, or composting animals on site and hauling to a waste burial landfill, waste burning incinerator, or rendering plant.
5. On site in an area that does not create a nuisance, traffic hazard, or wildlife risk.
6. On site in an area that does not have highly permeable soil or high water level, and is not within a 100-year floodplain and close to water wells, surface water well, surface water, and neighbors.
7. Because decomposing carcasses create a nuisance, spread disease, and contaminate water.

**Chapter 17 - Lesson 1 (New)**  
Natural, Accidental, & Intentional Outbreaks of Disease

1. The United States is at risk of foreign animal disease outbreaks involving bioterrorism. Potential occurrences of emerging animal disease outbreaks may be related to animal movement, agent mutation, or environmental changes.
2.
  - a. Endemic diseases are currently present in the United States but are not increasing in prevalence.
  - b. Emerging animal disease is a new disease or a new form of an existing disease.
  - c. Zoonotic disease is one that is shared between animals and humans.
  - d. Foreign animal disease is one that occurs in other parts of the world but not yet in the United States.
3. The first line of defenders are livestock owners.

**Chapter 17 - Lesson 2 (New)**  
Emergency Animal Management During Disasters

1. The key components of local emergency management plans for animal disaster include:
  - Non-disease issues (Communications, logistical support, profiles, informing the public, rescue capabilities, damage assessment, humane care)
  - Disease issues (quarantine measures and reporting to the appropriate regulatory agency)
  - Carcass disposal (movement, site, and containment measures)
  - Evacuation and shelter (identifying evacuation sites, emergency contacts, equipment, resources necessary to relocate animals, and appropriate shelters and supplies)
  - Simulative exercises (drills, reports, assessments, and communications)

**Chapter 17 - Lesson 3 (New)**  
Clinic Emergency Management Plan  
Activity Only