

Anatomy and Physiology (A&P) Course

Module Title: The Canine Systems		Date: 8/28/23
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TLO(s):	TLO 26: Identify the anatomical nomenclature of anatomy and the structure and physiology of canine systems. TLO 27: Identify common field injuries that occur to military working dogs (MWDs).	
ELO(s):	N/A	

Version Control Log

Version	Date	Changes & Comments	Update Author
1.0	8/23/2023	Initial Draft Submission	Anne-Marie Fiore, Ed.D.

1.0 Module Introduction Components

Title: **The Canine System**

Objectives(s) TLO 26: Identify the anatomical nomenclature of anatomy and the structure and physiology of canine systems.

TLO 27: Identify common field injuries that occur to military working dogs (MWDs).

Module Overview and Introduction

An animated eMentor appears on the screen, welcoming learners and providing an engaging overview of the module's content. The eMentor highlights the importance of understanding anatomical terms and introduces the topics that will be covered. This brief overview sets the stage for the exploration of various body systems in canines, ensuring learners are prepared for the in-depth information to follow.

Anatomical Terminology

The module begins with an introduction to anatomical terminology, which serves as the foundation for understanding the structure of the canine body. Learners will explore key directional terms such as anterior, posterior, dorsal, and ventral. Additionally, the planes of the body (sagittal, frontal, and transverse) are explained to aid in the identification and description of body positions and movements.

Skeletal System

In the next section, learners are introduced to the canine skeletal system. This part of the module discusses the various bones in a dog's body and their specific functions. Learners will explore the different types of bones, including long, short, flat, and irregular bones, and understand the role of joints in movement, with classifications such as ball-and-socket, hinge, and pivot joints explained in detail.

Muscular System

Following the skeletal system, the module transitions to the muscular system, focusing on the major muscle groups in dogs and their functions. Learners will gain insights into the different types of muscle tissues—skeletal, smooth, and cardiac—and understand how muscle contractions enable movement in the body.

Nervous System

The nervous system section provides an overview of the structure and function of the canine nervous system, including both central and peripheral components. Learners will be introduced to nervous tissue and its critical elements such as neurons and glial cells, and learn about the roles of the brain, spinal cord, and peripheral nerves in controlling bodily functions and responses.

Circulatory System

Next, the module explores the circulatory system, covering the anatomy of the canine cardiovascular system, including the heart and blood

vessels. Learners will dive into the functions of blood components and explore the pathways of pulmonary and systemic circulation that are essential for oxygen transport and waste removal in the body.

Respiratory System

The respiratory system module introduces learners to the anatomy of the lungs, trachea, and bronchi in dogs. This section explains the mechanisms of gas exchange, focusing on the role of the alveoli and how breathing and lung volumes are regulated to maintain oxygen supply throughout the body.

Digestive System

The digestive system segment explores the structure of the canine digestive system, highlighting the roles of the mouth, stomach, and intestines. Learners will understand the significance of enzymes in the digestion process, nutrient absorption, and the elimination of waste, providing a comprehensive look at how dogs process food.

Urinary System

In the urinary system section, the module details the components of the canine urinary system, including the kidneys, ureters, and bladder. The role of nephrons in filtering blood and maintaining water and electrolyte balance is explained, along with how the urinary system regulates homeostasis in the body.

Endocrine System

The endocrine system part introduces learners to the major endocrine glands in dogs, such as the thyroid, adrenal glands, and pancreas. This section covers the hormones these glands produce and how they regulate various bodily functions, as well as how endocrine disorders can affect a dog's overall health.

Reproductive System

The reproductive system module explores both male and female reproductive anatomy in canines, providing insights into reproductive cycles, hormone regulation, and the processes of pregnancy, childbirth, and lactation. This section equips learners with knowledge of how reproduction is controlled and managed in dogs.

Integumentary System

In this section, learners delve into the structure and functions of the skin, hair, and nails of dogs. The integumentary system's role in protection and temperature regulation is explained, along with common skin conditions that can affect canines and how they are treated.

Sensory Systems

The final section of the module covers the sensory systems of dogs, focusing on their eyes, ears, and nose. Learners will explore how vision, hearing, and olfaction function in dogs and how these sensory adaptations play a crucial role in their survival and daily interactions with the environment.

Motivator/Scenario Description

In the midst of an intense firefight out in the field, chaos and urgency fill the air. Amid the turmoil, a loyal four-legged companion is caught in the crossfire. Meet Max, a skilled Army canine whose determination matches that of his handler. As the firefight subsides, the dust settles, and the echoes of gunfire fade, Max's handler rushes to his side.

Amid the tense atmosphere, Max's handler, Sergeant Williams, finds his loyal partner lying still, his usually vibrant energy now replaced with an unsettling lethargy. Fear and concern grip Sergeant Williams as he carefully cradles Max in his arms and rushes towards the field medic, Specialist Anderson.

Specialist Anderson quickly assesses the situation, his focus fixed on Max's unresponsive state. With a sense of urgency, he engages in conversation with Sergeant Williams, aiming to gather crucial information that might shed light on Max's condition. Amid the palpable tension, Specialist Anderson's soothing yet authoritative demeanor helps Sergeant Williams recount the events leading up to Max's current state.

Max's condition remains a puzzle, but Specialist Anderson maintains his composure as he proceeds with a thorough examination. With a muzzle in place and tactical/cooling vests still on, Max's physical examination begins. Specialist Anderson's skilled hands navigate through Max's fur, his gaze matching Sergeant Williams' in determination.

As Specialist Anderson works, an image of an Army canine flashes before his mind – a Belgian Malinois, the embodiment of loyalty, courage, and unwavering service. The image, a testament to the partnership between handler and dog, only serves to strengthen his commitment to providing the best care possible.

In the midst of adversity, Specialist Anderson and Sergeant Williams collaborate, each contributing their expertise to unravel the mystery behind Max's sudden change. As the field medic's hands work diligently, their shared goal remains clear – to restore Max's vitality and return him to his role as a steadfast protector on the battlefield.

Transition Narration for eMentor Animation

"So, your loyal companion is facing an issue and Specialist Anderson brought him to you for an evaluation. What do you need to understand about canine anatomy and physiology to assist them? Let's explore the canine body system and familiarize ourselves with typical ailments that combat medics should consider in scenarios like this."

Establishing Scene

Side by side view of structure and function of a canine body with the anatomical nomenclature of anatomy areas marked.

2.0 DP: TLO 26: Identify the anatomical nomenclature of anatomy and the structure and physiology of canine systems

Initial Asset Requirements:

- a. Scene Descriptor: Side by side view of structure and function of a canine with anatomical nomenclature areas marked.
 - b. Metahumans: Selected eMentor for the A&P course.
 - c. Specific Assets:
 - i. Images:
 1. Image of function
 2. Image of structure
 - ii. 360 Images:
 1. Left Section: A diagram illustrates the anatomical nomenclature of canine anatomy. It features labeled lines and arrows pointing to key anatomical features of a dog's body. These labels include directional terms (e.g., anterior, posterior), body planes (e.g., sagittal, transverse), and anatomical regions (e.g., thorax, abdomen). This section emphasizes the importance of understanding anatomical terminology to communicate effectively about canine body structures.
 2. Right Section: A dynamic representation depicts the structure and physiology of canine systems. Various systems such as skeletal, muscular, circulatory, respiratory, digestive, urinary, and nervous are highlighted. Arrows connect different components within each system, showcasing their interconnections and functions. Captions provide concise explanations of the roles each system plays in maintaining a dog's overall health and functionality.
 - d. Injuries/Parts of the body:
 - i. [describe any injuries that will be visible or close-ups of body parts]
 - ii. [Example: Irritated skin on their back and has developed blisters on their feet, irritated skin on their back so severely that it has led to bleeding.]
2. Content and Strategies
 - a. LSA Information: [LA and ELO] TLO 26: LSA 1-2
 - b. Primary Strategy (Treatment): Animated presentation with narration from the eMentor.
 - c. Adaptive Strategy: [Job aid, paragraph of adaptive strategy]

Structure	Function
<p>Identify the components of the canine system</p> <ul style="list-style-type: none"> a. The following are canine glands: <ul style="list-style-type: none"> i. Pituitary. ii. Thyroid. iii. Parathyroid. iv. Adrenal. v. Pineal. b. The following are organs and tissues that secrete hormones: <ul style="list-style-type: none"> i. Hypothalamus. ii. Thymus. iii. Pancreas. iv. Ovaries. v. Testes. vi. Kidneys. vii. Stomach. viii. Liver. ix. Small intestine. x. Skin. xi. Heart. xii. Adipose tissue. xiii. Placenta. <p>Check on Learning</p>	<p>Identify the functions of the canine system</p> <ul style="list-style-type: none"> a. The canine system is responsible for releasing hormones into the body that reach target organs. This reaction causes negative and positive feedback loops to maintain homeostasis. b. Hormones are molecular chemical messengers which the canine system releases to regulate the activity of cells in other parts of the body. Blood carries hormones to their target site. c. Hormones perform several functions. Hormones help regulate: <ul style="list-style-type: none"> i. Chemical composition and volume of internal environment (extracellular fluid). ii. Metabolism and energy balance. iii. Contraction of smooth and cardiac muscle fibers. iv. Glandular secretions. v. Some immune system activities. d. Hormones are responsible to <ul style="list-style-type: none"> i. Control growth and development. ii. Provide for regular operation of the reproductive system. iii. Help establish circadian rhythms. <p>Check on Learning</p>

3. Checks on Learning

Type	Question	Correct Answer
MC	<p>Check on Learning</p> <p>Title: Canine Cardio Quiz</p> <p>Instructions: Get ready for a heart-pumping challenge! Test your knowledge of canine anatomy and cardiovascular function by answering the following question. Choose the correct option and see how well you know your stuff!</p> <p>Question 1: Which part of the heart is responsible for pumping blood through arteries, veins, and capillaries, and regulates the circulation of blood?</p> <p>Question 2: What is the term for the largest artery in a dog's body that carries oxygenated blood away from the heart? a) Pulmonary artery b) Aorta c) Coronary artery d) Carotid artery</p> <p>Question 3: Which component of a dog's blood is responsible for carrying oxygen to various parts of the body? a) Red blood cells b) White blood cells c) Platelets d) Plasma</p>	<p>Question 1: Answer: The correct option is the "Left Ventricle."</p> <p>Question 2: Answer: The correct option is "b) Aorta."</p> <p>Question 3: Answer: a) Red blood cells."</p>

3.0 DP: TLO 26: Identify the anatomical nomenclature of anatomy and the structure and physiology of canine systems

Initial Asset Requirements:

- a. Scene Descriptor: Side by side view of structure and function of a canine with anatomical nomenclature areas marked.
 - b. Metahumans: Selected eMentor for the A&P course.
 - c. Specific Assets:
 - i. Images:
 - 1. Image of function
 - 2. Image of structure
 - ii. 360 Images:
 - d. Injuries/Parts of the body:
 - i. [describe any injuries that will be visible or close-ups of body parts]
 - ii. [Example: Irritated skin on their back and has developed blisters on their feet, irritated skin on their back so severely that it has led to bleeding.]
 - iii.
4. Content and Strategies
- a. LSA Information: [LA and ELO] TLO 26: LSA 3-4
 - b. Primary Strategy (Treatment): Animated presentation with narration from the eMentor.
 - c. Adaptive Strategy: [Job aid, paragraph of adaptive strategy]

Structure	Function
Learning Step / Activity 3	Learning Step / Activity 3

<p>1) Heart Structure</p> <ul style="list-style-type: none"> a. Outer pericardium b. Myocardium c. Endocardium d. Fibrous pericardium e. Serous pericardium f. Four chambers (right atrium, right ventricle, left atrium, left ventricle) 	<p>1) Cardiovascular System Function</p> <ul style="list-style-type: none"> a. Transportation of nutrient fluid (blood), oxygen, immune substances, hormones, and chemicals to distant tissues b. Removal of tissue waste products and carbon dioxide c. Regulation of temperature d. Control of water-electrolyte balance <p>2) Heart Function</p> <ul style="list-style-type: none"> a. Pumping blood through arteries, veins, and capillaries b. Role in regulating circulation of blood c. Lymphatic system's assistance in fluid return d. Right heart's function in pumping blood through the lungs e. Left heart's function in pumping blood to peripheral organs f. Atrium's weak primer pump function g. Ventricle's strong pump function for propelling blood to tissues
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5. Checks on Learning

Type	Question	Correct Answer
MC	<p>Question 1: Match the function with the corresponding structure in the canine cardiovascular system:</p> <p>Structure: Outer pericardium Function: a) Pumping blood through arteries, veins, and capillaries b) Transportation of nutrient fluid (blood), oxygen, immune substances, hormones, and chemicals to distant tissues c) Assistance in fluid return through the lymphatic system d) Role in regulating circulation of blood</p>	<p>Question 1: Answer: d) Role in regulating circulation of blood</p> <p>Question 2: Answer: b) Transportation of nutrient fluid (blood), oxygen, immune substances, hormones, and chemicals to distant tissues</p> <p>Question 3: Answer: a) Pumping blood through arteries, veins, and capillaries</p>

Type	Question	Correct Answer
	<p>Question 2: Match the function with the corresponding structure in the canine cardiovascular system:</p> <p>Structure: Left heart's function in pumping blood to peripheral organs Function: a) Pumping blood through arteries, veins, and capillaries b) Transportation of nutrient fluid (blood), oxygen, immune substances, hormones, and chemicals to distant tissues c) Role in regulating circulation of blood d) Assistance in fluid return through the lymphatic system</p> <p>Question 3: Match the function with the corresponding structure in the canine cardiovascular system:</p> <p>Structure: Coronary arteries Function: a) Pumping blood through arteries, veins, and capillaries b) Transportation of nutrient fluid (blood), oxygen, immune substances, hormones, and chemicals to distant tissues c) Role in regulating circulation of blood d) Assistance in fluid return through the lymphatic system</p> <p>Question 4: Match the function with the corresponding structure in the canine cardiovascular system:</p> <p>Structure: Pulmonary veins Function: a) Pumping blood through arteries, veins, and capillaries b) Transportation of nutrient fluid (blood), oxygen, immune substances, hormones, and chemicals to distant tissues c) Role in regulating circulation of blood d) Carrying oxygenated blood from the lungs to the heart</p> <p>Question 5: Match the function with the corresponding structure in the canine cardiovascular system:</p>	<p>Question 4: Answer: d) Carrying oxygenated blood from the lungs to the heart</p> <p>Question 5: Answer: a) Pumping blood through arteries, veins, and capillaries</p>

Type	Question	Correct Answer
	Structure: Aorta Function: a) Pumping blood through arteries, veins, and capillaries b) Transportation of nutrient fluid (blood), oxygen, immune substances, hormones, and chemicals to distant tissues c) Role in regulating circulation of blood d) Carrying oxygen-deprived blood from the body to the heart	

4.0 DP: TLO 26: Identify the anatomical nomenclature of anatomy and the structure and physiology of canine systems

6. Initial Asset Requirements:
 - a. Scene Descriptor: Side by side view of structure and function of a canine with anatomical nomenclature areas marked.
 - b. Metahumans: Selected eMentor for the A&P course.
 - c. Specific Assets:
 - i. Images:
 1. Image of function
 2. Image of structure
 - ii. 360 Images:
 1. [list here] [2D OR 3D]
 - 2.
 - d. Injuries/Parts of the body:
 - i. [describe any injuries that will be visible or close-ups of body parts]
 - ii. [Example: Irritated skin on their back and has developed blisters on their feet, irritated skin on their back so severely that it has led to bleeding.]
 - iii.
7. Content and Strategies
 - a. LSA Information: [LA and ELO] TLO A: LSA 5-6
 - b. Primary Strategy (Treatment): Animated presentation with narration from the eMentor.
 - c. Adaptive Strategy: [Job aid, paragraph of adaptive strategy]

Structure	Function
<p>1) Canine Respiratory System:</p> <ul style="list-style-type: none"> a. Upper Airway Structures b. Nasal passages c. Pharynx d. Larynx e. Lower Airway Structures f. Trachea g. Carina h. Bronchi i. Bronchioles <p>2) Canine Skeletal System:</p> <ul style="list-style-type: none"> a. Axial Skeleton <ul style="list-style-type: none"> i. Skull ii. Vertebrae iii. Sternum iv. Ribs b. Appendicular Skeleton <ul style="list-style-type: none"> i. Pelvic girdle ii. Limbs c. Types of Bones <ul style="list-style-type: none"> i. Cancellous bone (spongy bone) ii. Compact bone iii. Long, short, flat, irregular, sesamoid bones d. Types of Joints <ul style="list-style-type: none"> a. Fibrous joints (immovable) b. Cartilaginous joints (slightly movable) <p>Synovial joints (most flexible)</p>	<p>1) Canine Respiratory System:</p> <ul style="list-style-type: none"> a. Airway Function <ul style="list-style-type: none"> i. Channel for air movement ii. Gas exchange at the alveoli iii. Uptake of oxygen and anesthetic agents iv. Release of carbon dioxide and waste gases b. Canine Skeletal System: <ul style="list-style-type: none"> i. Skeletal System Function ii. Support for the body iii. Framework for movement iv. Blood cell formation v. Protection of internal organs <p>2) Canine Muscular System:</p> <ul style="list-style-type: none"> a. Types of Muscles <ul style="list-style-type: none"> i. Skeletal muscles (controlled, conscious movement) ii. Smooth muscles (involuntary, nonconscious movement) iii. Cardiac muscles (involuntary, nonconscious movement) b. Muscle Categories <ul style="list-style-type: none"> i. Voluntary muscles (conscious control) ii. Involuntary muscles (nonconscious control)

8. Checks on Learning

Type	Question	Correct Answer
MC	<p>Question 1: Canine Respiratory System Question: Match the lower airway structure with its function: Structure: Trachea Function: a) Channel for air movement b) Gas exchange at the alveoli c) Uptake of oxygen and anesthetic agents d) Release of carbon dioxide and waste gases</p> <p>Question 2: Canine Skeletal System Question: Which type of bone provides support for the body, forms a framework for movement, contributes to blood cell formation, and protects internal organs? a) Cancellous bone (spongy bone) b) Compact bone c) Long, short, flat, irregular, sesamoid bones</p> <p>Question 3: Canine Muscular System Question: Which type of muscles are responsible for conscious, controlled movement in the body? a) Skeletal muscles (controlled, conscious movement) b) Smooth muscles (involuntary, nonconscious movement) c) Cardiac muscles (involuntary, nonconscious movement)</p>	<p>Question 1: Answer: a) Channel for air movement</p> <p>Question 2: Answer: b) Compact bone</p> <p>Question 3: Answer: a) Skeletal muscles (controlled, conscious movement)</p>

1.0 Module Introduction Components

Title: **The Canine System**

Objectives(s) TLO 27: Identify common field injuries that occur to military working dogs (MWDs).

Introduction

An animated eMentor appears on the screen, providing learners with an overview of the module's content, followed by the presentation of the module's topics. Subsequently, a smooth transition leads to the engaging motivator scenario. The module's subjects are trauma injuries: explosive injuries (blast trauma), trauma injuries (fractures, soft tissue injuries), burn injuries, chemical and toxic injuries, insect and animal bites, gunshot and shrapnel injuries, environmental injuries (heatstroke, hypothermia), lacerations and puncture wounds, behavioral and emotional responses to injury, internal injuries (abdominal trauma, internal bleeding), eye and ear injuries, respiratory injuries (smoke inhalation, respiratory distress), joint and muscle injuries, digestive system injuries, urinary system injuries, and sensory injuries (vision, hearing).

Motivator/Scenario Description

In the midst of an intense firefight out in the field, chaos and urgency fill the air. Amid the turmoil, a loyal four-legged companion is caught in the crossfire. Meet Tucker, a skilled Army canine whose determination matches that of his handler. As the firefight subsides, the dust settles, and the echoes of gunfire fade, Tucker's handler rushes to his side. As the mission unfolds, danger lurks at every turn, and the team faces a relentless adversary.

Transition Narration for eMentor Animation

"So, Tucker the loyal companion is injured. What do you need to understand about canine anatomy and physiology to assist him? Let's explore common field injuries that combat medics should consider in scenarios like this."

Establishing Scene

Side by side view of structure and function of a canine body with the anatomical nomenclature of anatomy areas marked.

2.0 DP: TLO 27: Identify common field injuries that occur to military working dogs (MWDs).

Discussion Point 1: Initial Asset Requirements:

- a. Scene Descriptor: Side by side view of various scenarios representing common field injuries that military working dogs (MWDs) Metahumans: Selected eMentor for the A&P course.
 - b. Specific Assets:
 - i. Images:
 1. Image of function
 2. Image of structure
 - ii. 360 Images:
 1. The 2D or 3D image depicts various scenarios representing common field injuries that military working dogs (MWDs) may encounter during their service. The background portrays a rugged battlefield environment with uneven terrain and scattered debris. Several MWDs are shown in different scenes, each highlighting a specific injury type: explosive injuries (blast trauma), trauma injuries (fractures, soft tissue injuries), burn injuries, chemical and toxic injuries, insect and animal bites, gunshot and shrapnel injuries, environmental injuries (heatstroke, hypothermia), lacerations and puncture wounds, behavioral and emotional responses to injury, internal injuries (abdominal trauma, internal bleeding), eye and ear injuries, respiratory injuries (smoke inhalation, respiratory distress), joint and muscle injuries, digestive system injuries, urinary system injuries, and sensory injuries (vision, hearing)
 - c. Injuries/Parts of the body:
 - i. [describe any injuries that will be visible or close-ups of body parts]
 - ii. [Example: Irritated skin on their back and has developed blisters on their feet, irritated skin on their back so severely that it has led to bleeding.]
9. Content and Strategies
- a. LSA Information: [LA and ELO]TLO 27: LSA 1-2
 - b. Primary Strategy (Treatment): Animated presentation with narration from the eMentor.
 - c. Adaptive Strategy: [Job aid, paragraph of adaptive strategy]

Structure	Function
Learning Step / Activity 1	Learning Step / Activity 1
<p>Handling Military Working Dogs (MWDs) - Safety:</p> <ul style="list-style-type: none"> a. MWD Characteristics <ul style="list-style-type: none"> i. Unpredictable and potentially dangerous ii. Behavior changes when ill, injured, or stressed iii. Need for trained handlers b. Safety Measures <ul style="list-style-type: none"> i. Handler presence during examination ii. Muzzling during handling iii. Control and supervision at all times iv. Transportation with a handler v. Portable kennels for transport <p>1. Identifying Respiratory Distress in MWDs:</p> <ul style="list-style-type: none"> a. Respiratory Distress Causes <ul style="list-style-type: none"> i. Trauma as a common trigger ii. Anxious behavior iii. Labored breathing iv. Specific body posture <p>2. Breathing Patterns and Causes</p> <ul style="list-style-type: none"> a. Obstructive breathing pattern <ul style="list-style-type: none"> i. Causes: upper airway obstruction, laryngeal paralysis, injuries b. Restrictive breathing pattern <ul style="list-style-type: none"> i. Causes: pneumothorax, hemothorax, diaphragmatic hernia, pleural effusion, pyothorax c. Parenchymal breathing pattern <p>Causes: pulmonary contusions, pulmonary edema, pneumonia</p>	<p>1. Handling Military Working Dogs (MWDs) - Safety:</p> <ul style="list-style-type: none"> a. Handler Role <ul style="list-style-type: none"> i. Control and best understanding of MWDs ii. Possession of first aid training iii. Responsibility for care and control b. Safety Prioritization <ul style="list-style-type: none"> i. Avoiding examination without a handler ii. Muzzling for control and safety iii. Continuous control and supervision iv. Necessity of a handler during transportation <p>2. Identifying Respiratory Distress in MWDs:</p> <ul style="list-style-type: none"> a. Manifestation of Respiratory Distress <ul style="list-style-type: none"> i. Anxious behavior ii. Labored breathing iii. Specific body posture iv. Abnormal breathing patterns b. Breathing Patterns and Their Causes <ul style="list-style-type: none"> i. Obstructive breathing pattern ii. Causes: trauma-related issues iii. Restrictive and parenchymal breathing patterns iv. Common causes: pneumothorax, pulmonary contusions

10. Checks on Learning

Type	Question	Correct Answer
<p>Matching, Click – n- Drop, Pick and Place, MC_All that Apply or TBD</p>	<p>Title: MWD Injury Response Challenge</p> <p>Objective: Test your knowledge of common field injuries that occur to Military Working Dogs (MWDs) and your ability to respond effectively to these situations.</p> <p>Instructions: In this game-based assessment, you will be presented with different scenarios depicting common field injuries that MWDs may encounter. Choose the most appropriate response or action for each scenario from the options provided. Your goal is to demonstrate your understanding of injury types and your ability to provide proper care and assistance to the injured MWDs.</p> <p>Game Scenarios:</p> <p>Scenario 1: Explosive Injury You and your MWD partner are caught in an explosion. Your MWD appears disoriented and is limping. What should you do?</p> <p>Scenario 2: Burn Injury Your MWD's fur is singed, and you suspect burn injuries. What's the initial action you should take?</p> <p>Scenario 3: Insect Bite Injury Your MWD shows signs of discomfort and swelling after being bitten by an unknown insect. What's the appropriate response?</p> <p>Scenario 4: Gunshot Injury Your MWD has been shot in the leg. What should you do first?</p> <p>Scenario 5: Heat-Related Injury Your MWD is panting excessively and appears disoriented in hot weather. What should you do?</p>	<p>Scenario 1: Explosive Injury Correct Answer: c) Keep your MWD calm and call for medical assistance.</p> <p>Scenario 2: Burn Injury Correct Answer: b) Use clean water to gently cool the burn for about 10-15 minutes.</p> <p>Scenario 3: Insect Bite Injury Correct Answer: c) Seek immediate medical assistance and keep the affected area elevated.</p> <p>Scenario 4: Gunshot Injury Correct Answer: d) Seek professional medical assistance immediately.</p> <p>Scenario 5: Heat-Related Injury Correct Answer: c) Move your MWD to a shaded area, offer water, and wet their body.</p> <p>Scenario 6: Behavioral Response to Injury Correct Answer: d) Provide comfort, reassurance, and a familiar environment.</p> <p>Scenario 7: Joint Injury Correct Answer: d) Rest the MWD and seek veterinary care for proper evaluation.</p>

Type	Question	Correct Answer
	<p>Scenario 6: Behavioral Response to Injury Your MWD is displaying signs of anxiety and restlessness after an injury. What's the appropriate action?</p> <p>Scenario 7: Joint Injury Your MWD is limping and seems to have injured a joint. What's the recommended course of action?</p> <p>Scenario 8: Eye Injury Your MWD has a foreign object in its eye. What's the best approach to handle this?</p> <p>Scenario 9: Internal Injury Your MWD was involved in an accident and is showing signs of abdominal pain. What should you do?</p> <p>Scenario 10: Trauma Injury Your MWD has a visible cut that's bleeding. What's the first step to take?</p>	<p>Scenario 8: Eye Injury Correct Answer: c) Flush the eye with clean water and seek veterinary care.</p> <p>Scenario 9: Internal Injury Correct Answer: c) Seek immediate medical attention and avoid feeding.</p> <p>Scenario 10: Trauma Injury Correct Answer: c) Press a clean cloth firmly against the wound to stop bleeding.</p>

3.0 DP: TLO 27: Identify common field injuries that occur to military working dogs (MWDs).

11. Initial Asset Requirements:

- a. Scene Descriptor: Side by side view of various scenarios representing common field injuries that military working dogs (MWDs) Metahumans: Selected eMentor for the A&P course.
- b. Specific Assets:
 - i. Images:
 1. Image of function
 2. Image of structure
 - ii. 360 Images:
 1. [list here] [2D OR 3D]
 - 2.
- c. Injuries/Parts of the body:
 - i. [describe any injuries that will be visible or close-ups of body parts]
 - ii. [Example: Irritated skin on their back and has developed blisters on their feet, irritated skin on their back so severely that it has led to bleeding.]
 - iii.

12. Content and Strategies

- a. LSA Information: [LA and ELO] TLO 27: LSA 3-4
- b. Primary Strategy (Treatment): Animated presentation with narration from the eMentor.
- c. Adaptive Strategy: [Job aid, paragraph of adaptive strategy]

Structure	Function

1. Additional Thoracic Injuries:

- a. Penetrating Trauma
- b. Rib Cage Trauma
 - i. Includes flail chest, rib fractures, and penetrating wounds
 - ii. Mimics pleural space injury (restrictive breathing pattern)
- c. Pleural Space Trauma
 - i. Involves PTX, hemothorax (HTX), and diaphragmatic hernia
 - ii. Presents with a restrictive breathing pattern and muffled lung/heart sounds
- d. Parenchymal Trauma
 - i. Common in pulmonary contusions and intrabronchial hemorrhage
 - ii. Causes mild to severe respiratory distress

2. Blast, Burn, and Crush Injuries:

- a. Blast Injury
 - i. Mechanisms: primary, secondary, tertiary, quaternary effects
 - ii. Signs include respiratory distress, traumatic amputations, CNS trauma, shock, etc.
 - iii. Delayed onset of clinical signs possible
- b. Burn Injury
 - i. Classification: superficial, superficial partial-thickness, deep partial-thickness, full-thickness

1. Additional Thoracic Injuries:

- a. Penetrating Trauma
- b. Rib Cage Trauma
 - i. Pain interference with gas exchange and ventilation
- c. Pleural Space Trauma
 - i. Impaired gas exchange due to blood or air in pleural space
- d. Parenchymal Trauma
 - i. Respiratory distress due to parenchymal injury

2. Blast, Burn, and Crush Injuries:

- a. Blast Injury
 - i. Varied mechanisms causing injuries
 - ii. Range of signs including respiratory distress, amputations, CNS trauma
 - iii. Delayed signs requiring serial monitoring
- b. Burn Injury
 - i. Classification based on depth of injury
 - ii. Inhalation injury may occur with delayed signs
- c. Crush Injury and Crush Syndrome
 - i. Crush injury causing muscle cell trauma
 - ii. Crush syndrome with systemic effects

Clinical signs indicative of various aspects of injury and shock

<p>ii. Inhalation injury possible, signs may not manifest immediately.</p> <p>3. Crush Injury and Crush Syndrome</p> <p>i. Crush injury from compression causing muscle trauma</p> <p>ii. Crush syndrome from extensive and prolonged crush injury</p> <p>iii. Systemic effects include hypovolemia, metabolic abnormalities, reperfusion injury</p> <p>Clinical signs include limb swelling, paresis, pain, hypotension, metabolic imbalances</p>	
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13. Checks on Learning

Type	Question	Correct Answer
MC	<p>Canine Trauma and Injuries Challenge</p> <p>Statement 1: Description: Pain interferes with gas exchange and ventilation due to injury. Options:</p> <p>Statement 2: Description: Impaired gas exchange due to the presence of blood or air in the pleural space. Options:</p> <p>Statement 3: Description: Respiratory distress caused by parenchymal injury. Options:</p> <p>Statement 4:</p>	<p>Answer Key</p> <p>Statement 1: Correct Answer: b) Rib Cage Trauma</p> <p>Statement 2: Correct Answer: c) Pleural Space Trauma</p> <p>Statement 3: Correct Answer: d) Parenchymal Trauma</p> <p>Statement 4: Correct Answer: a) Blast Injury</p>

Type	Question	Correct Answer
	<p>Description: Varied mechanisms causing injuries, including respiratory distress and amputations. Options: Statement 5: Description: Classification based on the depth of injury, may include delayed signs. Options: Statement 6: Description: Crush injury causing muscle cell trauma. Options: Statement 7: Description: Crush syndrome with systemic effects, clinical signs of injury and shock.</p>	<p>Statement 5: Correct Answer: b) Burn Injury</p> <p>Statement 6: Correct Answer: c) Crush Injury</p> <p>Statement 7: Correct Answer: d) Crush Syndrome</p>

4.0 DP: TLO 27: Identify common field injuries that occur to military working dogs (MWDs).

14. Initial Asset Requirements:

- a. Scene Descriptor: Side by side view of structure and function of a canine with anatomical nomenclature areas marked.
- b. Metahumans: Selected eMentor for the A&P course.
- c. Specific Assets:
 - i. Images:
 - 1. Image of function
 - 2. Image of structure
 - ii. 360 Images:
 - 1. [list here] [2D OR 3D]
 - 2.
- d. Injuries/Parts of the body:
 - i. [describe any injuries that will be visible or close-ups of body parts]
 - ii. [Example: Irritated skin on their back and has developed blisters on their feet, irritated skin on their back so severely that it has led to bleeding.]
 - iii.

15. Content and Strategies

- a. LSA Information: [LA and ELO] TLO 27: LSA 5-6
- b. Primary Strategy (Treatment): Animated presentation with narration from the eMentor.
- c. Adaptive Strategy: [Job aid, paragraph of adaptive strategy]

Structure	Function
<p>1. Identify the components of the canine system</p> <ul style="list-style-type: none"> c. The following are canine glands: <ul style="list-style-type: none"> a. Pituitary. b. Thyroid. c. Parathyroid. d. Adrenal. e. Pineal. 	<p>1. Identify the functions of the canine system</p> <ul style="list-style-type: none"> a. The canine system is responsible for releasing hormones into the body that reach target organs. This reaction causes negative and positive feedback loops to maintain homeostasis. b. Hormones are molecular chemical messengers which the canine system releases to regulate

<p>d. The following are organs and tissues that secrete hormones:</p> <ul style="list-style-type: none"> a. Hypothalamus. b. Thymus. c. Pancreas. d. Ovaries. e. Testes. f. Kidneys. g. Stomach. h. Liver. i. Small intestine. j. Skin. k. Heart. l. Adipose tissue. m. Placenta. <p>B. Check on Learning</p>	<p>the activity of cells in other parts of the body. Blood carries hormones to their target site.</p> <p>c. Hormones perform several functions.</p> <p>Hormones help regulate:</p> <ul style="list-style-type: none"> a. Chemical composition and volume of internal environment (extracellular fluid). b. Metabolism and energy balance. c. Contraction of smooth and cardiac muscle fibers. d. Glandular secretions. e. Some immune system activities. f. Control growth and development. g. Provide for regular operation of the reproductive system. h. Help establish circadian rhythms. <p>B. Check on Learning</p>
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16. Checks on Learning

Type	Question	Correct Answer
Matching, Click – n- Drop, Pick and Place, MC_All that Apply or TBD	Drag -n- Drop Canine Systems <ul style="list-style-type: none"> 1. How to Play: 2. Start Screen: Click on the "Start" button to begin the game. 3. Instructions: Read the instructions that explain you have to match the terms with their correct definitions or functions. 4. Game Screen: You will see two columns. The left column will have definitions or functions, and the right column will have terms. 	Definitions/Functions (Left Column) and their Correct Matches (Right Column): Responsible for releasing hormones into the body that reach target organs. Answer: Hormones

Type	Question	Correct Answer
	<p>5. Drag and Drop: Use your mouse to drag terms from the right column to their corresponding definitions or functions in the left column.</p> <p>6. Timer: You have 3 minutes to complete the matching. The timer is displayed at the top of the screen.</p> <p>7. Submit: Once you think all matches are correct, click the "Submit" button.</p> <p>8. Feedback: Immediate feedback will be provided. Correct matches will turn green, and incorrect matches will turn red.</p> <p>Definitions/Functions (Left Column):</p> <ol style="list-style-type: none"> Responsible for releasing hormones into the body that reach target organs. Molecular chemical messengers released to regulate the activity of cells in other parts of the body. Helps control metabolism and energy balance. Contraction of smooth and cardiac muscle fibers. Control growth and development. Helps establish circadian rhythms. Provides for regular operation of the reproductive system. Master gland of the endocrine system. Gland that helps control metabolism. Organ that secretes insulin. <p>Terms (Right Column):</p> <ol style="list-style-type: none"> Pituitary Hormones Thyroid Metabolism 	<p>Molecular chemical messengers released to regulate the activity of cells in other parts of the body.</p> <p>Answer: Hormones Helps control metabolism and energy balance.</p> <p>Answer: Thyroid Contraction of smooth and cardiac muscle fibers.</p> <p>Answer: Smooth Muscle Contraction Control growth and development.</p> <p>Answer: Growth and Development Helps establish circadian rhythms.</p> <p>Answer: Circadian Rhythms Provides for regular operation of the reproductive system.</p> <p>Answer: Reproductive System Master gland of the endocrine system.</p> <p>Answer: Pituitary Gland that helps control metabolism.</p>

Type	Question	Correct Answer
	e. Smooth Muscle Contraction f. Growth and Development g. Circadian Rhythms h. Reproductive System i. Pancreas	Answer: Thyroid Organ that secretes insulin. Answer: Pancreas

