



Working Dog Handler Medical Care Manual

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Introduction

Working dogs deployed in a tactical or high threat environment—like their human counterparts—are at high risk for injury. For the year 2016, the K9 Officer Down Memorial Page (ODMP) (<http://www.odmp.org/K9>) lists 34 Line of Duty canine deaths. However, this count is likely low, given that the website lists only the deaths reported.

The dangers faced by Department of Homeland Security (DHS) working dogs (WD) are evidenced by requests for DHS first responders and emergency medical service (EMS) personnel to treat an injured canine. Several of these requests have required air transport for the canine's care and well-being.

In light of these realities, this manual serves two purposes. The first is to provide the canine handler with basic information on best practices to maintain the health and welfare of their animals and provide basic emergency care when needed.

Secondly, the manual was developed to serve as a starting point for the developing field of canine emergency medical care training for EMS personnel. Courses for emergency canine care are being developed across the country for EMS providers. However, these courses and their recommended protocols are not standardized. This manual offers a primer for EMS training and a baseline for developing standards for personnel who may need to care for animals in emergency situations.

It's important to remember that the veterinary healthcare team remains the working dog's primary medical care provider and every effort should be made to obtain and/or coordinate medical care with qualified veterinary personnel.

Organization of the Manual

This manual is organized according to urgency of care – Tactical Combat Casualty Care (TCCC)/Tactical Emergency Casualty Care (TECC) is addressed first, followed by non-tactical emergency care, and routine or preventive medical care tasks. This organization prioritizes key tasks based on emergent care of canines.

- Section 1 – Canine TCCC/TECC and Safety Considerations
- Section 2 – Non-Tactical Emergency Care
- Section 3 – Routine Preventive Medical Care
- Section 4 – WD Handler Medical Care Tasks
- Section 5 – WD IFAK and Medical Care First Aid Kit Supply Lists

The tasks reflect current practices, which are based on experience with canine injury and illness in mission operations. The tasks also reflect the most current scope of practice for medical care of canines by handlers. The manual focuses on the tasks that are most critical to saving a canine's life, limbs, and eyesight. The tasks are designed to train handlers to provide the most effective immediate care to prevent further injury, reduce the effects of trauma and illness, and stabilize the patient while coordinating the next level of care.

The fifth section of the manual reviews the recommended organization of WD IFAK and Medical Care First Aid Kit and its contents.

Section I. Canine Tactical Combat Casualty Care / Tactical Emergency Casualty Care (TCCC /TECC) and Safety Considerations

Introduction

Tactical combat casualty care is the pre-hospital care delivered to an injured canine in a tactical, field environment. Besides caring for a canine's injuries, handlers must also deal with the tactical situation.

The immediate focus of care for injured canines in a tactical setting is best remembered using the **M³ARCH²** acronym:

- **M**ove to safe cover
- **M**uzzle the canine for safety
- Control **M**assive bleeding
- Ensure an open **A**irway
- Treat **R**espiratory distress
- Treat **C**irculatory failure
- Treat or prevent **H**ypothermia
- Manage **H**ead injury.

To summarize the M³ARCH² approach to tactical trauma, control massive bleeding immediately, as it kills rapidly. Then take steps to ensure the airway is open and manage collapsed lungs. Treat shock, manage or prevent hypothermia, and take steps to reduce complications due to head trauma.



Photo courtesy of DoD

Casualties and Wounds

In the field, the pre-hospital period is the most important time to care for any casualty. Up to 90 percent of deaths occur before a casualty reaches a medical treatment facility. Immediate first aid at the point of injury is critical to improve survival. Many traumatic deaths are due to severe bleeding leading to shock, airway blockage, and collapsed lungs due to chest trauma. Ninety percent of preventable deaths can be avoided with first aid to control bleeding, rapid treatment of collapsed lungs, and opening an airway.

TCCC/TECC Goals

- Prevent additional casualties
- Treat the injured canine
- Complete the mission

Stages of Care

There are three distinct phases of canine care in a tactical environment, each with its own characteristics and limitations:

1. Care Under Fire/Direct Threat Care (CUF/DTC)
2. Tactical Field Care/Indirect Threat Care (TFC/ITC)
3. Tactical Evacuation Care/Evacuation

Care Under Fire/Direct Threat Care (CUF/DTC)

CUF/DTC is the first aid provided by the handler at the point of injury while he/she and the casualty are still under hostile fire or imminent threat. The risk of additional injuries at any moment is extremely high for both the canine and the handler. The major considerations during this phase of care are to:

- Gain tactical superiority (e.g., suppress hostile fire or imminent threat)
- Move the casualty to a safe position
- Treat immediately life-threatening hemorrhage

First aid during this phase is complicated by several tactical factors. First, the medical supplies are limited to that which is carried by the individual handler. Second, the team's personnel will be engaged with hostile forces and will not be available to assist with casualty treatment and evacuation. Third, the tactical situation prevents the handler from performing a detailed examination or extensive treatment of casualties. Furthermore, these situations may often occur during night operations, resulting in severe visual limitations while treating the casualty.

Defensive Actions – The “best medicine is tactical superiority.” Rapid success is the immediate priority and the best way to prevent the risk of injury to other personnel or additional injuries to casualties. As soon as the handler is directed or able, the first objective is to keep a casualty from sustaining additional injuries.

Bleeding Wound Control – In humans, a major cause of preventable traumatic deaths is severe bleeding from leg wounds. Similarly, injuries to an artery or other major vessels of a canine can rapidly result in hemorrhagic shock and death from blood loss. The most important first aid is to stop any life-threatening bleeding as quickly as possible, because a canine may bleed to death before medical help arrives. However, bleeding control methods are different for humans and dogs due to differences of anatomy.

Life-threatening bleeding is any bleeding with bright red spurting blood (arterial bleed) or any large blood volume being lost, regardless of rate (e.g., soaks a hand-sized area with blood in less than 15 seconds). When in doubt, it is better to assume bleeding is a life-threatening rather than to ignore it.

- **Limb (leg) wounds:** Tourniquets are used with humans to stop severe bleeding. However, commercial windless tourniquets designed for use with people are not effective for canines. To control severe bleeding in canines:
 - **Bleeding below elbow and knee:** Use direct pressure and pressure dressing/bandages (+/- hemostatic agents).

- **Deep compressible wounds involving the upper limb (e.g., triceps, caudal thighs, and quadriceps) and junctional (axillae and groin) bleeding:** Use direct pressure, wound packing with dressing impregnated with hemostatic agent (preferred) or standard roll of gauze, and pressure bandage.
- **DO NOT** apply powdered or granular forms of hemostatic agents directly to the wound.
- **Non-extremity wounds (bleeding over the chest or abdominal cavities):** These injuries are difficult to identify and treat in the CUF/DTC phase. Attempt to provide direct pressure to open wounds over the chest or abdomen as you rapidly move the casualty to cover. An occlusive seal/ bandage is appropriate if open wounds are present. Rapid evacuation is critical to save the life of a casualty with internal bleeding.

Upper Airway Obstruction – DO NOT perform any immediate management of the airway during the CUF/DTC phase. Engage and neutralize the threat. Move the casualty to cover as quickly as possible. The time, equipment, and positioning required to manage an impaired airway expose the casualty and handler to increased risk. Handlers should defer airway management until the Tactical Field Care/Indirect Threat Care (TFC/ITC) phase, when the canine casualty and handler are safe from hostile fire or imminent threat.

Tactical Evacuation Care/Extrication – Evacuating an injured canine is often the most difficult aspect of TCCC/TECC, due to limited evacuation assets and personnel and the risk of further injury due to hostile fire. Extricating the canine from danger as quickly as possible is the evacuation priority during this phase of care. The simplest option is to drag the canine out of danger by the collar, vest, or by the scruff of the neck, rump, and/or legs.

Tactical Field Care/Indirect Threat Care (TFC/ITC)

TFC/ITC is the care given to the canine once the casualty and handler are no longer under imminent fire or threat. These terms also apply to situations when an injury has occurred with no hostile fire. This phase of care is characterized by the following:

- Risk from imminent fire or threat has been reduced but still exists.
- Medical supplies are still limited by what the handler carries.
- Time prior to evacuation or re-engagement with threat can range from a few minutes to many hours.
- The time available for definitive treatment is highly variable.

First aid during this phase is a continuation of care, with more detailed evaluation and treatment of the canine. First aid is still dictated by the tactical situation. In some cases, TFC/ITC will consist of rapid treatment of wounds with the expectation of a re-engagement with hostile forces at any moment; while in other cases the risk of re-engagement is lessened and more attention can be given to the injured canine. However, as time to evacuation may vary greatly, handlers must take care to conserve supplies in the event of prolonged evacuation wait times.

Medical supplies dedicated for use to treat human casualties should not be used for canines during the tactical setting or while in CUF/DTC situations, as this limits resources for care of injured people. Human dedicated supplies may be used for canines after addressing **ALL** human injuries.

Bleeding Wound Control—CUF/DTF Phase – Reassess looking for previously unrecognized or newly started massive bleeds. Stop significant leg bleeding as quickly as possible, using direct pressure, wound packing, hemostatic gauze/agents, and pressure dressings/bandages, as described previously. **DO NOT** use commercial tourniquets developed for humans.

Cardiopulmonary Resuscitation (CPR) – CPR for traumatic arrest is generally not successful and should not be attempted for canines with blast or penetrating injuries who have no pulse, are not breathing, have agonal gasping, or have no other signs of life. CPR in these cases may result in additional lives lost as care is withheld from canines with less severe injuries. Also, these attempts expose handlers to additional hazards from hostile fire/imminent threat. Handlers should consider CPR only in cases involving non-traumatic disorders such as hypothermia, near drowning, or electrocution.

Altered Mental Status – Canines with trauma should be handled carefully, as increased aggression is likely, which can be directed toward the canine's own handler. Muzzles should be used if the airway is not obstructed and the canine does not have breathing problems.

Airway Management – In the TFC/ITC phase, perform first aid for airway blockage once all life-threatening bleeding has been treated.

- **Conscious canine: DO NOT** attempt any airway intervention if the canine is conscious and breathing adequately on its own. Consider a barking or whining canine to have a clear airway.
- **Unconscious canine WITHOUT airway blockage:** If the canine is unconscious, the most likely cause is either shock or head trauma. In either case, an adequate airway must be maintained. Open the airway by extending the head and neck in a neutral in-line position, opening the mouth, pulling and extending the tongue over the canine's bottom jaw, and clearing any oral cavity secretions (blood, vomitus, etc.).
- **Unconscious canine WITH airway obstruction:** For unconscious canines with a removable airway blockage, the initial first aid is again to open the airway and attempt to clear the blockage without increasing the risk of pushing the blockage further down into the airway. **AVOID** blind "finger sweeps." If a blockage is caused by a smooth, removable object, start chest compressions. For **FIXED** airway obstruction (structural tissue damage, embedded shrapnel not able to remove, etc.), never attempt a Heimlich maneuver or chest compression in attempts to remove the object. Instead, evacuate immediately to definitive veterinary care.

Breathing – The next aspect of casualty care in the TFC/ITC phase is the treatment of any breathing problems, specifically an open pneumothorax (PTX or sucking chest wound) or a tension PTX. Pneumothorax is air that accumulates within the chest cavity between the lungs and the chest wall. This prevents the casualty from being able to expand and fill his/her lungs with air during inspiration.

- **Penetrating chest wounds:** Traumatic defects in the canine's chest wall may result in an open PTX. Always look for an entry and exit wound. All open chest wounds should be treated assuming an open PTX is present. Cover the wound during expiration with an occlusive dressing (ideally, a vented chest seal); the seal in the canine first aid set is ideal, but many different materials may be used. When a vented chest seal is not available, a non-vented occlusive dressing should be applied and sealed on all four sides. The canine should then be treated for the PTX that remains due to an open chest wound. The canine should also be monitored for the development of a tension PTX, which should be treated as described below.

- **NEVER** remove an impaled object. Instead, secure it in place and attempt to place an occlusive seal around the impaled object. Only consider removing an impaled object when:
 - a. The object interferes with establishing a patent airway.
 - b. The object cannot be adequately secured in place.
 - c. The object cannot be removed from the scene or transported with your canine (e.g., rebar sticking out from a concrete flooring).
- **Tension PTX:** Assume any progressive, severe respiratory distress resulting from penetrating or blunt chest trauma is due to a tension PTX. A canine with penetrating or blunt chest trauma may generally have some degree of hemothorax (blood in chest cavity) or PTX as a result of this primary wound. The following are clinical signs indicative of a tension PTX:
 - Rapid, shallow, and open-mouth breathing.
 - Acting agitated or unable to get comfortable.
 - Lack of drive and response to even basic commands, an unwillingness to move.
 - Head and neck extended with elbows and upper front legs held out away from body (e.g., tripod position).
 - Reluctance to lie down.
 - Asynchronous breathing pattern (e.g., abdomen and chest move in opposite directions during inspiration).
 - Barrel-chested with minimal chest excursion and more abdominal movement.
 - Cyanotic (blue) gums (late finding).
 - Collapse.

Bleeding Wound Control—TCF/ITC Phase – In this phase, hemorrhage control includes continued attention to any significant bleeding not previously controlled. Stop significant extremity bleeding as quickly as possible, using direct pressure, pressure dressing, and hemostatic gauze; pressure dressings/bandages can now more safely be applied. Again, tourniquet use is not recommended for canines.

Circulation/Shock Therapy – Shock Therapy during the TFC/ITC phase is guided by several assumptions:

- **Tactical situation:** The tactical situation may not allow time for shock therapy. Care may only consist of immediate evacuation while in severe distress.
- **Hemorrhage control:** Lack of hemorrhage control is the leading cause of preventable death. Therefore, hemorrhage control is paramount and takes priority, especially in a situation with limited time and resources.
- **Assessment:** In the tactical setting, determine the need for fluid resuscitation by assessing a canine's level of consciousness (mental status in absence of head trauma) and peripheral (femoral) pulses.
- **Shock:** Encountered in the tactical/high threat setting, shock will most likely be caused by massive blood loss. Assume the casualty is in shock if the canine has an altered mental status in the absence of head injury and/or has weak or absent peripheral (femoral) pulses.

- **Traumatic Brain Injury (TBI):** Canines with head injuries or TBI are special situations. Low blood pressure (hypotension) and low blood oxygen levels (hypoxemia) worsen brain injury and are difficult to control in the initial phases of care. If the canine with TBI is unconscious and has no peripheral pulse, he/she should be resuscitated to restore a palpable femoral pulse and then evacuated as soon as possible to definitive veterinary care.

Hypothermia/Cold Injury – Traumatic casualties are at a high risk for hypothermia, which is defined for canines as a whole body temperature below 97 °F. Hypothermia can occur regardless of the ambient temperature. Flow of adequate blood volume throughout the body is needed to keep people and animals warm. Massive blood loss leads to hypothermia by decreasing the volume of circulating blood flow throughout the body.

During the acute stages of hemorrhagic shock, blood flow to the periphery (outer portions of the body such as the skin and extremities) is decreased due to constriction of peripheral blood vessels; this event leads to the presence of cold extremities. In addition, the longer a casualty is exposed to the environment during treatment and evacuation, the more likely the development of hypothermia. This is especially the case in wet conditions when the casualty suffers from large open wounds to chest or abdominal cavities.

An aeromedical evacuation further elevates the risk of hypothermia. Hypothermia increases the risk of death and, therefore, handlers must minimize the casualty's exposure to the elements and prevent further blood loss during the TFC/ITC. Use any methods available to keep the casualty warm, such as the survival blanket in the first aid set, dry blankets, poncho liners, sleeping bags, etc. If an aeromedical evacuation is anticipated, ensure blankets, poncho liners, etc., are securely fastened to the casualty.

Hyperthermia/Heat Injury – **DO NOT** leave canines in unventilated rooms, carriers, or vehicles. Temperatures in parked vehicles may reach over 140 °F. Make sure the canine is able to cool him/herself with shade and access to clean, cool water at all times. Be aware of the surface the canine is working on; concrete and asphalt may be warmer than the ambient temperature. A canine with mild heat-related illness may recover if given prompt veterinary care. Severe heatstroke may be deadly and requires immediate veterinary care. Signs of heatstroke include rapid panting (the animal's primary cooling method), bright red tongue, red or pale gums, thick, sticky saliva, depression, weakness, dizziness, shock, or coma.

Abdominal Trauma with Open Abdominal Wound – Abdominal injuries are potentially devastating, with creation of open wounds that allow contamination of the abdominal cavity with significant risk of abdominal cavity infection (peritonitis) and injury to internal organs. During this phase of emergency care, handlers must rapidly identify open abdominal wounds and provide immediate first aid to moisten and cover any exposed organs and dress any open wounds. Rapid evacuation for surgical management is paramount. Ballistic wounds are difficult to identify in many cases, further increasing the risk of severe abdominal cavity infection.

Pain Control (Analgesia) – All canines in obvious pain or with trauma of any kind (even if the canine does not show major signs of pain) should be given analgesia. Treatment of pain improves patient comfort and allows easier evacuation and handling.

Tactical Evacuation Care/Evacuation

Tactical evacuation is the evacuation of casualties from the field. Tactical Evacuation Care is the care given once the casualty has been picked up by an aircraft, vehicle, or boat for transportation to a veterinary facility. For the first time, medical personnel and equipment in these assets may be available. In general, evacuation phase continues the care rendered during the TFC/ITC phase, with minor additions based on the following conditions:

- Medical personnel and equipment may accompany the evacuation asset.
- Reality suggests that handlers should expect to continue to provide emergency medical care during evacuation. Canine handlers should **NOT** expect medical personnel support until the canine reaches the first available medical facility.

Massive Hemorrhage Control – Reassess interventions performed during the previous phases of care. Look for previously unrecognized or newly started massive bleeds. Stop significant leg bleeding as quickly as possible, using direct pressure, wound packing, hemostatic gauze/agents, and pressure dressings/bandages, as described previously. **DO NOT** use commercial tourniquets devised for humans.

Airway Management – During the Tactical Evacuation Care phase, follow the same principles introduced during the TFC/ITC phase. Managing an injured canine with an impaired airway can be exceedingly difficult during tactical evacuation. Additional skill sets like those possessed by certain DHS EMS personnel may be required.

Breathing – During the Tactical Evacuation Care phase, management of the casualty's breathing is a continuation of the interventions made during the TFC/ITC phase. Continue to treat penetrating open chest wounds with occlusive dressings as needed and monitor for the development of a tension PTX. Ensure any impaled objects remain secured in place. Oxygen may be brought by the evacuation asset. Most casualties do not require oxygen, but it should be used for seriously injured casualties, especially in the following circumstances:

- Unconsciousness.
- Evidence of TBI.
- Shock.
- Canines at high-altitude.

Heat or Cold Injury – Temperature management is extremely important during the Emergency Care phase, especially if the canine is evacuated in an aeromedical asset. Continue to follow the hypothermia prevention principles of the care phase: minimize the casualty's exposure to the elements and cover to maintain body heat. If the doors of the aeromedical asset must be kept open, protect the casualty from the wind and secure any blankets, poncho liners, etc., to ensure they do not fly off and become a rotary hazard.

Fractures – Splint all long bone fractures below the elbow joint and below the knee joint as circumstances allow. The absence of a distal pulse with a possible fracture should be cause for more immediate evacuation.

Penetrating Eye Trauma – Penetrating eye trauma injuries can deteriorate without proper care. **DO NOT** attempt to bandage the eye, as canines seldom tolerate eye bandages and the bandage could worsen the eye injury. Flush the eye and apply bandages only if well tolerated by the canine. Avoid any pressure being placed on the eye, as this could cause the internal contents of the eye to be pushed out. If available, place a commercial or improvised (e.g., bucket with bottom cut out) e-collar on the canine to prevent self-trauma. Consider covering the uninjured eye to reduce the level of anxiety as well as reduce “sympathetic” movement of the injured eye. If impaled object is present, avoid any external pressure on the eye and, without causing further injury, consider stabilizing the object to prevent movement during extraction. This may be accomplished by cutting out the bottom of a Styrofoam or paper cup and securing the cup over the canine’s eye.

Burn Injury – Burn casualties should have their wounds covered with dry sterile bandages. Burns to the face and neck should raise the suspicion for airway compromise.

Additional Measures – All other aspects of care during the Tactical Evacuation Care phase are identical to those during the Tactical Field Care phase. Hemorrhage must be controlled.

Summary of Canine Tactical Emergency Casualty Care Guidelines

CUF/DTC Phase	TFC/ITC Phase	Tactical Evacuation Care Phase
<ul style="list-style-type: none"> • Handler must remain engaged against the threat before caring for canine • Rapidly move the canine to safety • Muzzle the canine if conscious and no upper airway obstruction present • Rapidly evaluate the injured canine for massive hemorrhage • Provide immediate hemorrhage control of any bleeding wounds: <ul style="list-style-type: none"> - Direct pressure - Pressure bandage - DO NOT use windlass tourniquets 	<ul style="list-style-type: none"> • CPR only in canines with hypothermia, electrocution, or near-drowning • Handle cautiously if mentation is altered; canine may have increased aggression; muzzle if no suspected airway issues • Reassess Massive Hemorrhage • Airway management: <ul style="list-style-type: none"> - Clear oral cavity, use a modified Heimlich maneuver in specific instances • Provide ongoing hemorrhage control: <ul style="list-style-type: none"> - Direct pressure, hemostatic agents, pressure bandage • Breathing management: <ul style="list-style-type: none"> - Open chest wound and PTX management: <ul style="list-style-type: none"> + Chest seal, pressure bandage • Tension PTX management: <ul style="list-style-type: none"> - Take vital signs - Perform physical exam of a canine • Bandage open abdominal wounds; moisten and protect exposed organs • Prevent/treat shock-induced hypothermia: <ul style="list-style-type: none"> - Minimize exposure to elements - Apply survival blanket; use any cover available • Provide analgesia 	<ul style="list-style-type: none"> • Reassess Massive Hemorrhage • Airway management: <ul style="list-style-type: none"> - Continue as for Tactical Field Care phase • Breathing: <ul style="list-style-type: none"> - Chest seal open chest wounds - Manage PTX and tension PTX as for Tactical Field Care phase - Provide supplemental oxygen if available • Ongoing shock therapy • Ongoing hypothermia prevention • Splint fractures below the elbow or knee joints • Infection control <ul style="list-style-type: none"> - Flush and bandage wounds • Eye trauma or irritation management • Burn injury management • Provide analgesia

Section 2. Non-Tactical Emergency Care

Several common emergency situations arise with canines in non-tactical situations. Immediate medical care by the handler is essential to save lives. Delayed treatment results in increased morbidity and mortality.

Gastric Dilatation-Volvulus Syndrome (GDV)

GDV is a rapidly progressing condition in which the stomach fills with air, fluid, and food (dilation). If the dilation is severe, the stomach can twist on its long axis (volvulus). Volvulus “pinches off” the esophagus and small intestine, which prevents movement of stomach contents by vomiting or normal intestinal flow. Rapid and massive air accumulation continues in the stomach due to fermentation of food.

Early signs of GDV include non-production retching or dry heaves, pain, and abdominal distension. Death due to GDV can occur in as few as 1 to 2 hours without treatment. Early death is due to shock, because the markedly dilated stomach obstructs all blood flow returning from the abdomen and hind legs, causing decrease blood return to the heart. Later death can be due to rupture of the stomach, persistent shock despite treatment, and multiple organ failure related to shock.

Treatment of GDV requires immediate measures to treat shock while decompressing the air in the stomach. Decompression of the stomach is not done by handlers. Rapid evacuation to a medical facility is essential for advanced management and surgical care. Most deployed canines have had a prophylactic gastropexy performed as an elective procedure; however, some canines have not had this procedure performed and thus remain at increased risk. Also, it is still a possibility (albeit low) that a GDV may occur in a canine who previously had a gastropexy.

Hyperthermia/Heat Injury

Heat injury develops when the core body temperature increases (hyperthermia) due to exertion, exposure to increased environmental temperature and humidity, or both. The subsequent hyperthermia exceeds the capability of the patient to compensate. There are three types of heat injury based on the severity of the resulting injury. In canines, heat injury is classified as being mild (heat stress), moderate (heat exhaustion), or severe (heatstroke). See Task 11.

Pad or Paw Injury

Canines are deployed to austere environments and often injure their foot pads and paws. Frequently, unprotected pad and paw injuries become infected or worsen, reducing performance or leading to inability to utilize the canine. Handlers need to be skilled at treating pad and paw wounds and applying bandages. See Task 18.

Allergic Reaction: To Insect Bite or Sting

Spider bites, bee stings, and wasp stings can cause intense allergic reactions. The simple administration of antihistamines often is all that is necessary to manage mild or moderate cases and will markedly improve chances that canines with severe allergic reactions will survive evacuation to a veterinary facility for advanced care. See Task 19.

Allergic Reaction to Arthropod or Reptile Envenomation

In the case of poisonous bites from a snake, spider, or lizard, or a sting from a scorpion, prompt and appropriate care provided by handlers in the first few minutes can markedly reduce the effects of envenomation and save lives. Immediately evacuate a canine to a veterinary facility for advanced care. See Task 20.

Vomiting or Diarrhea

Vomiting and diarrhea have many causes. Most of the time, vomiting and diarrhea in canines is self-limiting. This means that the underlying cause is mild and that simple therapy provided by handlers is all that is necessary to allow the stomach and intestines to recover. Simply withholding food and water for set periods is an action that handlers can take to facilitate full recovery of affected canines. See Task 21.

Dehydration

Dehydration is a major concern in active canines, especially those canines deployed to austere environments and subjected to an increased operational tempo. Other factors may reduce water intake and/or lead to increased water loss. See Task 22.

Toxic Ingestion Exposure

Although uncommon, there are reports of canines ingesting training aids. Given the nature of these toxic chemicals and drugs and the austerity of deployment environments and limited veterinary support, it is critical that handlers be trained to provide immediate care for a canine who ingests a training aid. The first step – unless contraindicated – is to evacuate the stomach by inducing the canine to vomit using hydrogen peroxide as available. See Task 23.

Chemical, Biological, Nuclear, Radiological, Explosive (CBRNE) Exposure

Although the chance is considered remote, it is possible that canines could be exposed to CBRNE agents. Given the current and projected terrorist threat, this aspect of care must be addressed. See Task 25.

Hypothermia/Cold Injury

Handler care for hypothermia (a body temperature lower than normal) includes treatment for freezing injuries to canines, specifically frostbite. While an unlikely injury, frostbite that does develop is severe and can lead to elimination of affected canines from service. See Task 12.

Head, Neck, or Trunk Injury

Canines are deployed to austere environments and often incur their heads, necks, or trunks. Frequently, bandages are required to protect the injuries and provide support and comfort. Handlers need to be skilled at applying head, neck, and trunk bandages. See Task 26.

Section 3. Routine Preventive Medical Care

Canines need sustained preventive medical care for optimal health and fitness. Much of the time, especially in operational situations, common medical tasks will need to be performed by the handler. General health care and welfare for canines includes performing daily health checks, feeding and watering appropriately, grooming, providing adequate housing, and providing adequate exercise and social interaction.

Oral medication administration. Handlers routinely need to administer monthly heartworm and intestinal parasite preventative medications. Handlers often need to administer oral antibiotics and medications to control or treat pain. See Task 1.

Ear cleaning and medication administration. Ear problems are very common in canines. Handlers must be adept at routine cleaning of dirty, inflamed, or infected ear canals and administering otic medications. See Task 1.

Trimming toenails. While it seems mundane, canines with untrimmed toenails may suffer debilitating injuries prevent accomplishing the mission, such as torn toenails, digit fractures, infections, pad lacerations, lameness, and decreased function. See Task 1.

Vaccinations. Additionally, handlers must be aware of the risks posed to canines and handlers by local feral animals, who may carry diseases such as the rabies virus. See Task 27.

Section 4. WD Handler Medical Care Tasks

Task	Title
TCCC/TECC TASKS	
1	Routine Preventive Medical Care
2	Taking the Vital Signs
3	Physical Exam
4	Primary Survey Using the M ³ ARCH ² Acronym to Prioritize Care
5	Bleeding Wound
6	Basic Cardiac Life Support
7	Upper Airway Obstruction
8	Open Chest Wound
9	Open Abdominal Wound
10	Circulation/Shock Therapy
11	Hyperthermia/Heat Injury
12	Hypothermia/Cold Injury
13	Aeromedical Evacuation
14	Apply a Splint or Soft Padded Bandage to a Fracture of the Limb
15	Eye Irritation or Trauma
16	Burn Injury
EMERGENCY CARE TASKS	
17	Gastric Dilatation-Volvulus (GDV)
18	Pad or Paw Injury
19	Allergic Reaction to Insect Bite or Sting
20	Allergic Reaction to Arthropod or Reptile Envenomation
21	Vomiting and/or Diarrhea
22	Dehydration
23	Toxic Ingestion Exposure
24	Opioid/Fentanyl Occupational Exposure
25	CBRNE Exposure
26	Bandage to the Head, Neck or Trunk
PREVENTIVE MEDICAL CARE TASKS	
27	Animal Bite Prevention, Local Animal Control, and Rabies Awareness

WD Handler Medical Care, Task I

Routine Preventive Medical Care

Action: Provide comprehensive routine, preventative health care for a canine.

Conditions: The handler must perform general health care and provide appropriate welfare for a canine.

Standard: Performed appropriate general health care and welfare for a canine.

Performance Steps

1. General health care and welfare for canines includes performing daily health checks, feeding and watering appropriately, grooming, providing adequate housing, and providing adequate exercise and social interaction.
2. Daily Health Check:
 - A. Nothing will take a canine “out of the fight” faster than neglecting his/her health and welfare. Like humans, canines must be properly fed, watered, and rested for optimal performance.
 - B. Handlers must perform a daily health inspection and note and report any abnormalities.
 - C. Any veterinary-prescribed medications must be administered as directed.
 - D. Signs a canine needs immediate EMERGENCY care include:
 - a. Bloating.
 - b. Heat injury.
 - c. Uncontrollable bleeding.
 - d. Ingestion of toxins such as explosives, narcotics, poisons, or chemicals.
 - e. Ingestion of a foreign object.
 - f. Persistent vomiting.
 - g. Persistent diarrhea.
 - h. Wounds that require sutures (stitches).
 - i. Fever $>103^{\circ}\text{F}$ (not associated with normal body temperature increase while working).
 - j. Signs of shock.
 - E. Signs the canine may need non-emergency veterinary care, as soon as possible, include:
 - a. Signs of parasites in stool/vomit or on skin/fur.
 - b. Unexplained lethargy.
 - c. Loss of appetite for more than 48 hours.
 - d. Stiffness, weakness, or limping not due to excessive exercise or activity.
 - e. Signs of lameness or infection (heat, pain, swelling, redness, loss of function).
 - f. Blood in stool.
 - g. Bloody vomit.
 - h. Discharge from eyes, nose, genitals, or anus.
 - i. Wounds that will not heal.
 - j. Excessive weight loss.
 - k. Stress related behaviors (temperament changes, visible nervousness or anxiety, excessive panting, reduced performance, increased sensitivity to environmental stimuli, obsessive behaviors).
 - l. Additional illness/injury that cannot be treated locally and clearly reduces the canine’s ability to perform proficiently.
3. Feeding and watering:
 - A. Canines eat specially-formulated food and should never be fed human rations, scraps, or treats. Canine handlers should bring the amount of rations for the duration of the mission plus an emergency reserve. The only person authorized to set or change

the diet for a canine is a veterinarian or the local kennel supervisor. An ideal weight range is established by a veterinarian for each canine, and each canine is fed an amount of food daily to keep the canine within the ideal weight range. Adjustments are made based on body weight gain or loss after discussions between the handler and supporting veterinarian.

- B. Canines consume the same water (bottled or purified or from approved potable water sources) as handlers. Canines should not consume non-potable water, such as from ponds, lakes, streams, puddles, ditches, culverts, or farm troughs. Water from these sources may contain infectious organisms that cause severe vomiting, diarrhea, dehydration, and parasitism.
4. Grooming:
 - A. Proper daily grooming helps keep the canine's skin and coat healthy and allows early detection of problems. Grooming is the perfect time to conduct the daily health check on the canine.
 - B. Grooming prevents matted hair, removes loose hair, and stimulates the flow of natural oils.
 - C. Follow the five-step process to proper grooming of a canine. Groom each canine daily.
 - a. Step 1 – Rub the canine's coat against the grain using hands and fingers.
 - b. Step 2 – Using the grooming brush, brush hair against the grain to remove loose hair and skin in the undercoat.
 - c. Step 3 – Brush the hair with the grain to return the coat to its natural position.
 - d. Step 4 – Using the palms of your hands, give the canine a rub down with the grain of the coat to distribute natural oils.
 - e. Step 5 – Use a comb or slicker brush to remove excess undercoat.
 5. Kenneling:
 - A. Handlers should prepare a kennel for transporting their canines and may bring other supplies to establish a "field kennel" while supporting the unit.
 - B. On short-term missions, canines commonly sleep with their handlers.
 - C. Canines should be provided an area to sleep that can be kept safe, secure, and sanitary – preferably free from noises and distractions.
 - D. In hot climates, handlers should make every effort to provide canines an area that is shaded and well-ventilated. If available, fans and/or HVAC systems can be used to keep the kennel area reasonably cool and dry. Unless the temperature is dangerously high, canines should not sleep in overly air-conditioned spaces, as this can counteract acclimatization and stress the canine when working in hot climates. Canines should have constant access to clean, cool water in the kennel area.
 - E. In extreme cold weather (below 32 °F), canines may require heated spaces.
 - F. No matter what type of kennel is established, the handler's focus should be on security, safety, and sanitation.
 - a. Regardless of the material used to construct the kennel, the kennel must be free of sharp edges or points that can cause injury to canines.
 - b. The kennel must be well-ventilated and provide shade from direct sunlight.
 - c. Field kennels must not be located near trash collection, storage, disposal areas, fuel depots, HAZMAT areas or items, or other areas that pose obvious health risks.
 - d. **Safety** – Field kennels should be located in areas free from hazards such as sharp rocks, broken glass, or foreign materials that canines might ingest. Check the

area for hazards before constructing a kennel and remove any potentially hazardous materials. **DO NOT** use kennel areas to store unit equipment that is not related to canines; when bored and unsupervised, canines may chew on whatever is available and become ill.

- e. **Sanitation** – Handlers must ensure that kennels, containers, and rooms used to house canines are cleaned daily and washed and disinfected weekly. Equipment used to feed the canine must be washed and disinfected after each use. Components must designate an area for canine relief. This area must be kept clean of feces, and urine should be raked thoroughly through the soil to allow for sunlight disinfection. If the kennel smells like urine or feces, it is not sanitary. Food, water, and food waste will attract feral animals, rodents, and indigenous canines. These animals are very likely to carry external and internal parasites and diseases – including rabies – that can be transmitted to canines and their handlers.
- f. **Food and Water Storage** – Canine rations must not be stored in an area exposed to direct sunlight or extreme heat. Store the food in accordance with label instructions. Dog food will attract rodents, so use adequate prevention to limit attraction. An individual canine's need for water can be variable, especially with changes in ambient temperature, relative humidity, and level of exertion. Plan that each canine will require 2½ to 3½ liters of water per day. Handlers should ensure that kenneled canines have water available at all times. It is vital that water designated for canines use is kept in a shaded location or indoors so that it remains as cool as possible. Proper water storage and ready access will

ensure the canine will drink a sufficient amount to stay well-hydrated.

6. Exercise and social interaction:
- A. As with human athletes, properly conditioned animals perform better, acclimate more rapidly, endure more intense environmental and operational stressors, and resist heat stress more readily than poorly conditioned animals.
 - B. Canine physical fitness can be achieved and maintained through both conditioning and daily duty performance.
 - C. Canines heavily utilized for duty may not require additional conditioning to maintain performance. However, canines who are kenneled with minimal physical work lose condition over a short period (two to three weeks) and should be the primary target group for additional conditioning efforts.
 - D. A physical fitness training package is incorporated into basic handler and canine training and is recommended for maintenance conditioning.
7. Administration of oral medication to a canine:
- A. Canine handlers often must administer an oral medication (liquid, tablet, or capsule) to a canine. This typically requires another handler to assist with positioning and restraint.
 - B. Obtain the prescribed medication.
 - a. Verify the medication matches the veterinarian's prescription by checking the bottle for type of medication, strength, dosage, etc.
 - b. Ensure the medication is not expired by checking the expiration date on the bottle.
 - c. **DO NOT** give the medication if the medication has expired or is not the medication prescribed without first consulting with veterinary personnel.

- C. Prepare medication for administration.
- a. Tablets or capsules.
 - i. Check the label of the bottle for dose.
 - ii. Take out required dose.
 - iii. Wrap the tablet or capsule in a meatball. It is easiest and safest to give a canine a tablet or capsule this way as most dogs will eat a meatball. If high quality canned dog food is not available, wrap the tablet or capsule in a hotdog or a chunk of cheese.
 - b. Liquid medication.
 - i. Check the label of the bottle for dose.
 - ii. Draw up the required dose in a syringe or applicator provided with the medication
- D. Direct your assistant to position and restrain the canine in the down or sitting position, unless using a meatball to administer the medication.
- E. Administer tablets or capsules.
- a. Give the canine the prepared meatball. Ensure the canine has swallowed the medication--the meatball and the tablet or capsule should be swallowed completely.
 - b. If the canine will not eat the meatball, then take the following steps:
 - i. Take the medication out of the meatball.
 - ii. Grasp the upper jaw, with the palm of one hand resting on the canine's muzzle.
 - iii. Lift and extend the canine's head.
 - iv. Press the upper lips over the upper canine teeth.
 - v. Apply gentle pressure directly behind the canine teeth, using the thumb and index finger. **DO NOT** cause harm to the canine by using too much force or pressure.
 - vi. Pick up the tablet or capsule using the thumb and index finger or the index and middle finger of the free hand.
 - vii. Open the canine's mouth by pushing downward on the lower jaw using the free fingers of the hand holding the tablet or capsule.
 - viii. Place the tablet or capsule on the center, far back portion of the canine's tongue.
 - ix. Hold the canine's mouth closed. Ensure the canine has swallowed the medication-- massage the canine's throat with a gentle up and down motion until the canine swallows the tablet or capsule.
 - x. If the canine does not swallow the capsule, try the following:
 - Gently tap the nose or under the chin to startle the canine into swallowing the capsule.
 - Blow sharply into the canine's nostrils to cause the canine to swallow. This is not advised on a fractious or aggressive canine.
 - Place 1 to 2 drops of water on the canine's nose.
- F. Administer liquid medication.
- a. Tilt the canine's head so the nose and eyes are in one line (parallel to the floor).
 - b. Form a pocket by pulling out the canine's lower lip at the corner of the mouth.
 - c. Insert the syringe or applicator containing the medication into the pocket using the free hand. **DO NOT** scrape the gums with the syringe.
 - d. Push the plunger of the syringe or applicator forward.
 - e. Administer the medication slowly in 3 to 5 mL increments, and observe for swallowing while administering the medication.

8. Administration of ear medication to a canine:
 - A. Canine handlers must often administer ear medication. This typically requires another handler to assist with positioning and restraint.
 - B. Obtain the prescribed medication.
 - a. Verify the medication matches the veterinarian's prescription by checking the bottle for type of medication, strength, dosage, etc.
 - b. Ensure the medication is not expired by checking the expiration date on the bottle.
 - c. **DO NOT** give the medication if the medication has expired or does not match the prescription without first consulting with veterinary personnel.
 - C. Direct your assistant to position and restrain the canine in the down or sitting position.
 - D. Expose the ear canal by gently holding the pinna (ear flap) straight up.
 - E. Administer the medication.
 - a. Position the dispenser directly above the outside opening of the ear.
 - b. **DO NOT** touch any portion of the ear with the dispenser.
 - c. Administer the prescribed amount of medication. It must go directly into the ear canal.
 - d. Gently massage the base of the ear.
 - e. Release the pinna.
 - F. Repeat the procedure in the other ear if applicable.
9. Cleaning the ear canals of a canine:
 - A. Handlers frequently must clean the external ear canals of canines.
 - B. Direct another handler to position and restrain the canine in the down or sitting position.
 - C. Gently pull the pinna (ear flap) straight up with one hand and hold it vertically. If the pinna itself is extremely dirty, you will need to clean it.
 - D. Observe the ear canal for obvious deformities. Look for things such as lumps, sores, excessive debris, or offensive odors. **DO NOT** attempt to clean the ear if there are wounds, masses, or ulcers until you have consulted your supporting veterinary personnel.
 - E. Apply ear cleanser so that the entire external ear canal is filled with cleaning solution. Ensure the canine does not shake the cleanser out of the ear until you have massaged the ear. **DO NOT** use any other liquid other than an ear cleanser to clean the ears.
 - F. Massage the base of the ear to break up debris in the ear.
 - G. Allow the canine to shake head.
 - H. Blot any excess cleanser using 4- by 4-inch gauze sponges. **DO NOT** scrub or push debris down into the ear canal. **NEVER** use swabs or other similar devices to clean the ears, as these push debris deep into the canal. **DO NOT** attempt to clean the vertical or horizontal canals; the general rule of thumb is "clean what you can see."
 - I. Ensure the ear is clean.
 - a. Look in the ear to ensure it is clean.
 - b. If the ear still appears dirty, repeat the steps above until no further debris is observed on the cotton balls or gauze.
 - J. Check the other ear and, if dirty, clean the ear canal as described above.
 10. Toenail trimming:
 - A. You need to trim the toenails as part of routine health care for your canine. You may require another handler to position and restrain the canine.

- B. Hold the nail trimmers with the handle with one hand while holding the canine's paw in the other.
- C. Position the nail in the trimmers as close to the quick as possible with the cutting blade away from the quick.
 - a. The quick is the central portion of the nail that is very sensitive and contains small blood vessels. The quick is also known as the nail vein. Cutting the quick causes pain, bleeding, and in some cases, can lead to infection.
 - i. In light or white nails, the quick appears pink or darker than the nail.
 - ii. It is harder to see the quick in dark nails.
 - iii. If in doubt about the position of the quick, position only the very tip of the nail in the trimmers.
- D. Cut the nail with the nail trimmers in one smooth motion.
- E. Repeat the nail trimming process on every nail of each paw, as necessary.
- F. Take immediate action to stop bleeding in the event you cut the quick.
 - a. Apply direct pressure to the bleeding nail tip with a 4 x 4 inch gauze.
 - b. If direct pressure does not stop the bleeding, apply the styptic powder by pressing a small amount of the powder on the bleeding quick and holding the powder in place for 1 to 2 minutes.

Performance Measures	GO	NO GO
1. Performed daily health check.		
2. Recognized conditions that require immediate emergency care.		
3. Recognized conditions that require ASAP medical care.		
4. Understands proper food and water requirements.		
5. Understands the importance of and technique for grooming.		
6. Understands the issues related to proper canine kenneling.		
7. Understands the importance of initial conditioning and daily exercise.		
8. Administered oral medication properly.		
9. Administered ear medication properly.		
10. Cleaned the ear canals properly.		
11. Trimmed toenails properly.		

WD Handler Medical Care, Task 2

Taking the Vital Signs

Action: Take the vital signs of a canine.

Condition: A canine's vital signs are taken as a part of a general examination and to determine their overall health.

Standard: Accurately measured the vital signs of a canine.

Performance Steps

1. Vital signs are a key component of the physical evaluation of a canine. Handlers need to know how to take a canine's vital signs and what is considered "normal" for your canine. Learning how to take the vital signs of your canine will let you quickly recognize abnormal conditions and relay important findings to veterinary staff when needed.
2. Measure the vital signs of the canine.
 - A. Vital signs are most meaningful if measured while the canine is at rest and not stressed. Measure the following vital signs at every physical examination or when examining a canine because of illness or injury:
 - a. Body temperature.
 - b. Pulse rate and character.
 - c. Respiratory rate and character.
 - d. Mucous membrane color.
 - e. Capillary refill time (CRT).
 - f. Skin turgor.
 - g. Level of consciousness.
 - h. Body weight.
 - i. Body condition score (BCS).
 - B. Determine the canine's rectal temperature:
 - a. Lubricate the thermometer by squeezing a small amount of sterile lubricant onto a gauze sponge and rolling the thermometer tip in the lubricant.
 - b. Lift the tail gently and insert the thermometer 1 to 2 inches into the canine's rectum.
 - c. Support the abdomen and DO NOT allow the canine to sit.
 - d. Hold the thermometer in place until it beeps or flashes.
 - e. Remove the thermometer and wipe it with an alcohol pad.
 - f. Read the thermometer.
 - g. The normal rectal temperature of a canine is 100.5 °F to 102.5 °F.

NOTE: The canine's temperature may be increased due to high environmental temperatures, stress, exercise, or because of illness or injury.

NOTE: If your canine is uncooperative, an axillary temperature can be taken by placing the thermometer in the armpit area. This method does not produce as accurate a reading as the rectal temperature method.
 - C. Determine the canine's pulse rate and character.
 - a. Locate the femoral artery by placing the flat of your hand in the groin area and then gently pressing on the middle of the inner thigh with the index and middle fingers until you feel pulsations.



The femoral artery is located in the inner thigh.
Photo courtesy of DoD

- b. Count the number of pulsations to determine pulses per minute using one of the following methods:
 - i. Count all pulses in a 60 second period.
 - ii. Count for 30 seconds and multiply the result by 2.
 - iii. Count for 15 seconds and multiply the result by 4.
 - c. The normal pulse range of a canine is from 70 to 120 pulses or beats per minute (bpm).
 - d. Judge the pulse character using the following terms:
 - i. Regular or irregular rhythm.
 - ii. Strong or weak strength.
 - iii. The normal pulse character of a canine is regular and strong.
- D. Determine the canine's respiratory rate and character.
- a. Count the number of times the canine breathes to determine breaths per minute using one of the following methods:
 - i. Count the number of breaths taken in 60 seconds.
 - ii. Count the number of breaths taken in 30 seconds and multiply by 2.
 - iii. The normal respiratory rate of a canine is from 10 to 30 bpm.
 - b. Judge respiratory character as follows:
 - i. Depth:
 - (aa) Shallow.
 - (bb) Deep.
 - (cc) Normal.
 - ii. Rhythm:
 - (aa) Panting.
 - (bb) Regular.
 - (cc) Forced.
 - c. The normal respiratory character of a canine is a normal depth and regular rhythm.
- E. Determine the canine's mucous membrane color and mucous membrane moistness. The best place to check mucous membrane color and moistness is the tissue covering the gums in the mouth.
- a. Expose the canine's gums by gently pulling the top lip up or the bottom lip down and note the color of the gums.
 - b. The normal mucous membrane color of a canine is pink. Pink mucous membranes tell us that enough oxygen is being delivered to tissues.
 - c. Abnormal mucous membrane color includes any of the following:
 - i. Pale or white.
 - ii. Blue.
 - iii. Yellow.
 - iv. Brick-red.
- NOTE: Some breeds have black (pigmented) mucous membranes. If this is the case, place your thumb on the skin just under the lower eyelid and gently pull down and observe the color of the membranes of the inner lower eyelid.**
- d. Note the moistness of the gums by gently touching your finger to the exposed gums. Mucous membrane moistness is one of several crude assessments of the canine's hydration status.



Mucus membrane moisture can determine basic hydration. Dry or tacky gums suggests dehydration.



CRT assesses blood flow. Press into the gums to blanch the area.

Photos courtesy of DoD

- i. Normal mucous membranes are moist or slippery.
 - ii. Mucous membranes that are dry or tacky to the touch are abnormal and suggest dehydration.
- F. Determine the canine's CRT, which is the amount of time (measured in seconds) that it takes blood to return to an area of the gum after it has been blanched by your finger. CRT assesses the flow of blood to tissues.
- a. Expose the canine's gums by gently pulling the top lip up or the bottom lip down.
 - b. Gently press your index finger into the gums to blanch the area.
 - c. Release the finger and count in seconds how long it takes for blood to return to the area.
 - d. The normal CRT of a canine is less than 2 seconds.

- G. Determine the canine's skin turgor or skin elasticity. Skin turgor is another one of the crude assessment tools to evaluate a canine's hydration status.
- a. Gently grasp a small area of skin over the back and pull it up into a "tent."
 - b. Hold for a few seconds and then release.
 - c. Note how long it takes the skin to return to normal.
 - d. The normal skin turgor in a canine is immediate return of tented skin to its normal position.
 - e. Skin that remains tented more than 1 or 2 seconds is a crude indicator of dehydration.
- H. Observe the canine's level of consciousness or mental alertness. Use one of the following terms to describe the canine's mental alertness:
- a. **Agitated:** The canine can't sit still, moves rapidly and irregularly, and acts "disturbed."

- b. **BAR (Bright, alert, and responsive), or QAR (quiet, alert, and responsive):** The canine appears mentally normal.
 - c. **Depressed:** The canine appears “down,” lethargic, and not interested in normal activities (work, play), and may have a loss of appetite; the canine responds to verbal and physical stimuli but is slow to respond.
 - d. **Stupor:** The canine acts “drunk” and “out of it;” the canine responds to physical stimulation but not verbal stimulation; responses are very slow.
 - e. **Coma:** The canine is completely unresponsive to verbal and physical stimulation.
- I. Determine the canine’s weight and BCS by weighing the canine on the scale and observing the canine’s physical appearance. BCS should be determined using the Body Condition Score chart as a reference.
- a. The optimal BCS for a canine is a score of 4 or 5 on the BCS chart.
 - b. Any canine that is above or below the optimal BCS range is possibly over- or underweight.
- NOTE: Every canine has an ideal weight range (IWR) established. The normal body weight of a canine is one that falls within the established IWR.**
- J. Record vital signs:
- a. Body temperature.
 - b. Pulse rate.
 - c. Pulse character: regular or irregular; strong or weak.
 - d. Respiratory rate.
 - e. Respiratory character: normal, shallow, or deep; regular, panting, or forced.
 - f. Mucous membrane color.
 - g. Mucous membrane moistness.
 - h. CRT: less than (≤ 2) or greater than (> 2) seconds.
 - i. Skin turgor: normal or slow.
 - j. Level of consciousness or mental alertness: BAR, QAR, depressed, stupor, coma, or agitated.
 - k. Body weight.
 - l. BCS: X out of 9 or X/9.
 - m. Any other significant observations or abnormalities. Be specific, noting time and speed of onset.
- K. Notify veterinary staff immediately of any abnormalities or significant findings.

Performance Measures	GO	NO GO
1. Determined the canine’s rectal temperature.		
2. Determined the canine’s pulse rate and character.		
3. Determined the canine’s respiratory rate and character.		
4. Determined the canine’s mucous membrane color and moistness.		
5. Determined the canine’s CRT.		
6. Determined the canine’s skin turgor.		
7. Determined the canine’s level of consciousness.		
8. Determined the canine’s weight and BCS.		
9. Recorded vital signs using the appropriate format.		
10. Notified veterinary staff of any abnormal findings.		

Body Condition Score Chart




TOO THIN	1	Ribs, lumbar vertebrae, pelvic bones, and all bony prominences evident from a distance. No discernible body fat. Obvious loss of muscle mass.	
	2	Ribs, lumbar vertebrae, and pelvic bones easily visible. No palpable fat. Some evidence of other bony prominence. Minimal loss of muscle mass.	
	3	Ribs easily palpated and may be visible with no palpable fat. Tops of lumbar vertebrae visible. Pelvic bones becoming prominent. Obvious waist and abdominal tuck.	
IDEAL	4	Ribs easily palpable, with minimal fat covering. Waist easily noted, viewed from above. Abdominal tuck evident.	
	5	Ribs palpable without excess fat covering. Waist observed behind ribs when viewed from above. Abdomen tucked up when viewed from side.	
TOO HEAVY	6	Ribs palpable with slight excess of fat covering. Waist is discernible viewed from above, but is not prominent. Abdominal tuck apparent.	
	7	Ribs palpable with difficulty; heavy fat covering. Noticeable fat deposits over lumbar area and base of tail. Waist absent or barely visible. Abdominal tuck may be present.	
	8	Ribs not palpable under heavy fat covering or palpable only with significant pressure. Heavy fat deposits over lumbar area and base of tail. Waist absent. No abdominal tuck. Obvious abdominal distention may be present.	
	9	Massive fat deposits over thorax, spine, and base of tail. Waist and abdominal tuck absent. Fat deposits on neck and limbs. Obvious abdominal distention.	

Illustration courtesy of the Nestlé® Corporation

WD Handler Medical Care, Task 3

Physical Exam

Action: Perform a physical examination of a canine.

Conditions: A canine requires a general physical examination.

Standard: Performed an accurate general physical exam of a canine.

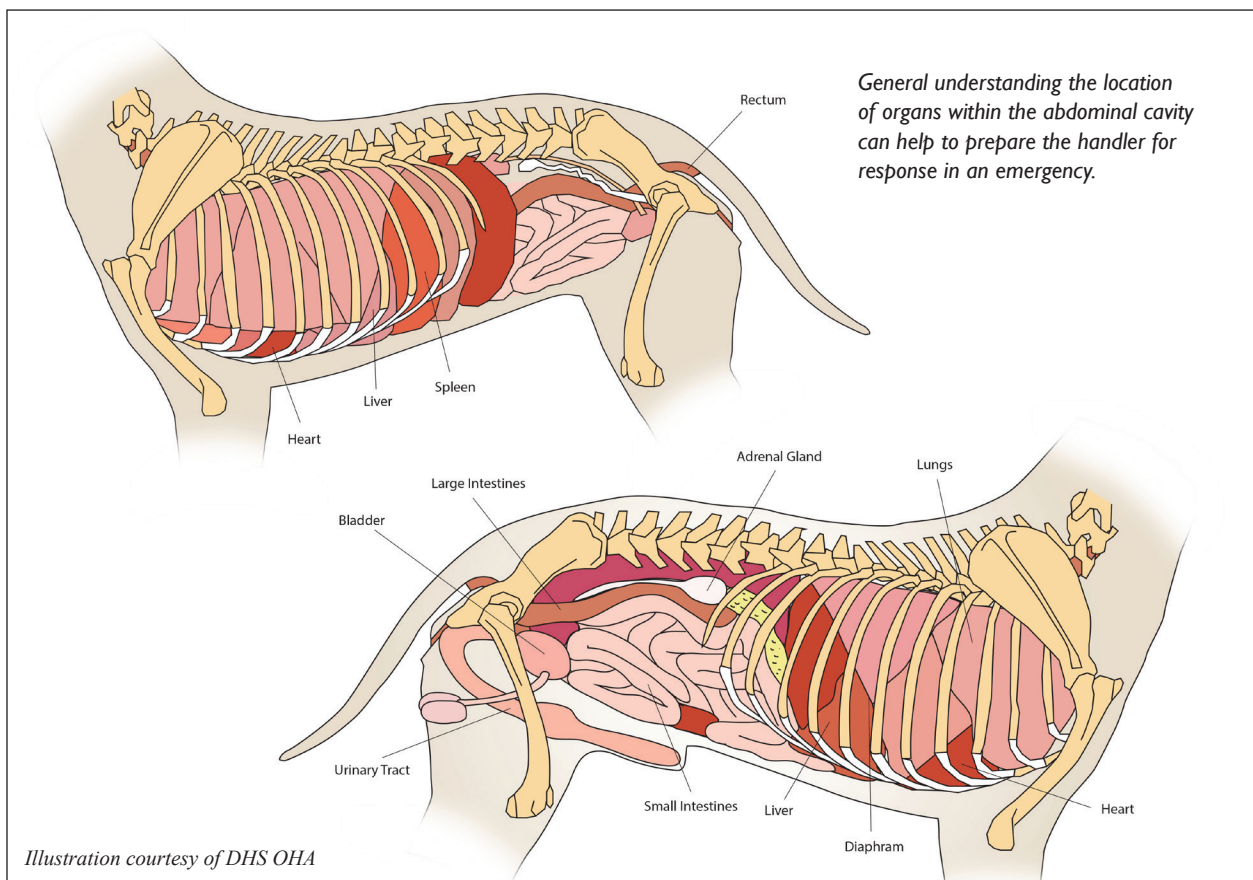
Performance Steps

- I. To identify an illness or injury, you must be able to recognize what is normal or abnormal for your canine. Sometimes a condition is so obvious that there is no question as to its abnormality. But, frequently changes in your canine's health and disposition are subtle, and it is important to recognize the changes early. Early recognition of a serious problem can save your canine's life. Always assess (palpate/observe) anatomical symmetry between body halves.
2. Perform a physical exam of the canine.
 - A. Note any external obvious signs of injury or illness.
 - a. Before restraining your canine for physical exam, observe the animal in a natural state (that is, in the kennel or in the exercise yard). Look for:
 - i. Abnormal behavior, attitude, or level of consciousness.
 - ii. Food and water intake.
 - iii. Normal work or play.
 - iv. Vomiting or diarrhea.
 - v. Normal urination and defecation.
 - vi. Lameness or abnormal gait.
 - vii. Any other obvious signs of injury or illness.
 - b. Get closer to your canine and observe from about an arm's length away. Again, look for any obvious signs of injury or illness.
 - B. Direct the assisting handler to position and restrain the canine. The handler may need to adjust the canine's position or restraint method depending on what part of the canine you need to examine.
 - C. Measure and record the canine's vital signs.
 - D. Examine the canine's head.
 - a. Observe the canine's head. Look for abnormalities including:
 - i. Eye discharge.
 - ii. Nasal discharge.
 - iii. Areas of hair loss.
 - iv. Swelling.
 - v. Masses.
 - vi. Sores.
 - vii. Obvious deformities.
 - b. Evaluate the canine's eyes. Look for the following:
 - i. Foreign object lodged in or around the eye.
 - ii. Eye trauma or an eye out of its socket.
 - iii. Masses.
 - iv. Twitching or spasms of the eyelids.
 - v. Abnormal discharge such as blood or pus.
 - vi. Cloudiness of the clear part of the eye (cornea).
 - c. Examine the muzzle. Look for the following:
 - i. Obvious deformities.
 - ii. Swelling.

- iii. Sores.
- iv. Discharge.
- d. Examine the lips. Look for the following:
 - i. Obvious deformities.
 - ii. Warts or similar bumps.
 - iii. Masses.
 - iv. Redness or swelling.
- e. Remove the muzzle and, if the canine will allow, examine the inside of the mouth. Look for the following:
 - i. Obvious abnormalities, such as broken teeth or tongue injury or bruising.
 - ii. Masses.
 - iii. Cuts or sores.
 - iv. Redness or swelling.
 - v. Foreign objects.
 - vi. Abnormal odor.
- f. Examine the ears for foreign substances or debris.
 - i. Note accumulation of debris (may be dark, dry, waxy).
 - ii. Note possible infection (moist, greenish-yellow substance).
 - iii. Note abnormal odor.
- E. Examine the canine's hair and skin. Look for the following:
 - a. Areas of hair loss.
 - b. Parasites (lice, fleas, and ticks).
 - c. Redness and swelling.
 - d. Crusts.
 - e. Scales.
 - f. Masses.
 - g. Matted hair.
- F. Examine the trunk and limbs.
 - a. Feel the muscles and bones of the rib cage and front and hind legs. Note the following:
 - i. Swelling.
 - ii. Masses.
 - iii. Pain response.
 - b. Flex and extend all the joints of the front and hind legs. Note the following:
 - i. Swelling.
 - ii. Pain response.
 - c. Check the spaces between toes of the paws. Look for the following:
 - i. Foreign objects.
 - ii. Cuts and scrapes.
 - iii. Wounds.
 - iv. Swelling or masses.
 - d. Check the nails for proper trimming. Nails should not extend beyond the pad of the toes.
- G. Observe the genitalia. In both the male and female canine, look for the following:
 - a. Inflammation.
 - b. Swelling.
 - c. Obvious deformities.
 - d. Abnormal discharge (**NOTE:** A small amount of yellowish-green discharge from the prepuce is normal).
 - e. Sores, especially of the scrotum.
- H. Observe the rectum and anal area. Look for the following:
 - a. Inflammation.
 - b. Swelling.
 - c. Masses.
 - d. Sores or wounds.
- I. Examine the tail. Look for the following:
 - a. Wounds.
 - b. Sores.
 - c. Areas of hair loss.
- J. Examine extremities. Look for the following:
 - a. Inflammation.
 - b. Swelling.
 - c. Masses.
 - d. Sores or wounds.

- Notify veterinary personnel of any abnormalities or significant findings. Make a written record of observations.

Performance Measures	GO	NO GO
1. Noted any external obvious signs of injury or illness.		
2. Measured and recorded vital signs.		
3. Examined the head.		
4. Examined the hair and skin.		
5. Examined the trunk and limbs.		
6. Examined the genitalia.		
7. Examined the rectum and anal area.		
8. Examined the tail.		
9. Made a written record of observations.		
10. Notified veterinary staff of any abnormal findings.		



WD Handler Medical Care, Task 4

Primary Survey Using the M³ARCH² Acronym to Prioritize Care

Action: Perform a primary survey on a canine.

Conditions: A canine is severely injured. Their wounds must be rapidly prioritized in a hostile environment.

Standard: Performed a primary survey within 2 minutes of beginning the patient evaluation and detected potentially life-threatening problems using the M³ARCH² acronym to guide efforts.

Performance Steps

1. Canines can become seriously ill or injured in a very short period of time. It is critical to identify life-threatening problems immediately. A primary survey is a rapid examination designed to target the most critical body systems in order of importance to detect serious problems. The survey should be performed quickly (in less than 2 minutes).
2. Prioritize care using the M³ARCH² acronym when evaluating canines with injuries while under hostile fire or when the threat of hostile action is high. This acronym provides a quick reference for deciding what injuries must be treated based on severity and likelihood for causing death.

M. Move to safe cover.

M. Muzzle the canine for safety! The only reasons not to muzzle a canine are if the canine is unconscious or has an upper airway obstruction, severe facial trauma, or a need to pant (e.g., heat injury).

M. Massive hemorrhage must be controlled immediately. Look for obvious external bleeding from the legs or wounds to the neck and junctional areas.

A. Airway obstruction must be cleared as soon as possible.

- a. Listen for labored and noisy breathing that suggests something is blocking the airway.

- b. Feel the throat area and trachea (wind pipe) in the front part of the neck. Look for obvious masses, wounds, swellings, or deformities that may cause airway obstruction.
- c. If the canine is unconscious or has labored breathing, open the mouth and examine the inside and as far back into the throat area as you can see. Look for masses, foreign objects, swelling, or deformities that may cause airway obstruction.

R. Respiratory difficulty, usually due to pneumothorax (air leaking into the chest, causing lung collapse), must be recognized and treated quickly.

- a. Watch the canine breathe for clues to the location of lung or airway trauma or problems.
 - i. Deep, labored breathing suggests lung trauma or lung problems, such as lung bruising.
 - ii. Shallow, rapid breathing suggests air, blood, or some other fluid in the space around the lungs inside the chest cavity.
 - iii. Irregular breathing may indicate brain injury.
- b. Look at the mucous membranes (gums). Blue, pale or white, yellow, or bright red gums are abnormal.

- c. Feel the chest rise and fall with each breath.
 - d. Look for open chest wounds.
- C. Circulatory** failure due to shock must be treated as soon as it is safe to do so.
- a. Look for signs of shock.
 - b. Determine the canine's pulse rate and character.
 - i. A very slow pulse rate or a very rapid pulse rate suggests major trauma or medical problem.
 - ii. Absence of pulse rate indicates cardiac arrest.
 - c. Determine the canine's capillary refill time.
 - d. Prolonged CRT (>2 seconds) suggests poor blood flow to tissues.
- H. Hypothermia** must be anticipated and prevented or treated.
- H. Head injury** must be identified and measures taken to reduce further injury.
3. During operations, a full primary survey will not be possible during the CUF/DTI phase. During this phase, while under threat, handlers must prioritize efforts, as follows:
- A. Remain engaged against the threat before caring for the canine.
 - B. Rapidly move the canine to safety when the tactical situation permits.
 - C. Muzzle the canine if the canine is conscious and no upper airway obstruction is present.
 - D. When possible, the handler should rapidly evaluate the injured canine for immediate life-threatening hemorrhage and provide immediate hemorrhage control. During the CUF/DTI phase, these efforts are usually limited to direct pressure and use of hemostatic gauze.
4. During operations, a full primary survey will likely be possible once the immediate threat is reduced, typically during the TFC/ITC phase. During this phase, more attention can be given to the casualty. Handlers must focus efforts on the most immediately pressing problems, as follows:
- A. Only perform Basic Cardiac Life Support CPR on canines who arrest due to hypothermia, electrocution, or near-drowning.
 - B. Keep the canine muzzled at all times, for safety, unless this is not possible due to face injuries or respiratory blockage.
 - C. Provide ongoing hemorrhage control with direct pressure, hemostatic agents, and pressure bandages.
 - D. Manage upper airway obstruction by clearing the oral cavity and performing a modified Heimlich maneuver for upper airway blockages. Tasks must be completed only as the tactical situation allows.
 - E. Open chest wounds and pneumothorax may now be treated.
 - F. Bandage open abdominal wounds after moistening, protecting any exposed organs.
 - G. Treat shock if signs are noted.
 - H. Prevent or treat shock-induced hypothermia by minimizing exposure to the elements and covering the canine using a survival blanket or any cover available. Lift the canine off the ground or wet surface, dry the canine, etc.
5. During aeromedical evacuation, the handlers should continue efforts to identify life-threatening problems while treating severe injuries.
- A. Request aeromedical evacuation.
 - B. Continue to manage upper airway obstruction.
 - C. Continue to manage open chest wounds and pneumothorax. Give oxygen if it is available.

- D. Continue shock resuscitation.
 - E. Continue to prevent or treat hypothermia.
 - F. Splint fractures below the elbow or knee joints.
 - G. Provide first aid for eye trauma or irritation.
 - H. Provide first aid for any burns.
6. Treat injuries found, and evacuate the canine to the nearest veterinary facility.
 7. Record all findings and treatment when the tactical situation permits, especially the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Knows the M³ARCH² acronym for injury severity and treatment priority.		
2. Provided focused medical care under the CUF/DTI phase.		
3. Provided focused medical care under the TFC/ITC phase.		
4. Provided focused medical care under the Tactical Evacuation Care phase.		
5. Activated aeromedical services and continued treating life-threatening injuries.		

WD Handler Care, Task 5

Bleeding Wound

Action: Provide immediate hemorrhage control for a bleeding wound in a canine.

Condition: A canine has been wounded and is bleeding.

Standard: Provided immediate hemorrhage control for a bleeding wound in a canine without causing further harm to the patient.

Performance Steps

1. Uncontrolled bleeding can cause shock and lead to further complications or cause death. Serious bleeding, especially arterial bleeding, must be controlled immediately.

NOTE: although tourniquets are considered life-saving in people with major extremity bleeding, tourniquets have not been shown to be needed for canines with extremity hemorrhage. In addition, human commercial windlass tourniquets do not effectively tighten around canine extremities.

2. Arterial bleeding (bleeding from injured arteries) is much more likely to cause shock and death than venous bleeding (bleeding from injured veins) and must be managed more aggressively:
 - A. Arterial bleeding is more likely in groin, axillary (armpit), deep neck, leg, and paw wounds.
 - B. Arterial bleeding is usually bright red in color and spurts or flows rapidly from the injury site.
 - C. First aid for arterial bleeding requires immediate direct pressure with application of one or more of the following: wound packing, hemostatic clotting agent, and pressure bandage.
3. Venous bleeding is generally less likely to cause shock or death unless major veins are injured.
 - A. Venous bleeding is usually dark in color and oozes from the injury site.
 - B. First aid for most venous bleeding involves applying immediate direct pressure and a pressure bandage.
4. Provide first aid for mild bleeding.
 - A. Immediately apply direct pressure with your hand and continue to hold firm pressure while you or another handler gather your first aid supplies.
 - B. Cover the bleeding wound with 5 to 10 sterile 4 x 4 inch gauze sponges.
 - a. If sterile 4 x 4 inch gauze sponges are not available, use clean pieces of cloth, a field dressing, or similar material.
 - b. The priority is to control bleeding. Dirty wounds and infections can be dealt with later.
 - C. Continue to apply firm pressure to the wound, with the bandage between the wound and your fingers.
 - D. Using direct pressure to stop bleeding takes time. **DO NOT** lift or remove the bandage to look at the wound, because this will break up the clot that is forming and bleeding will begin again.

- E. If the bleeding leaks through the gauze sponges or cloth, apply more gauze sponges or cloth on top of the gauze originally applied; **DO NOT** remove the original gauze or cloth.
- F. Without removing the gauze sponges, apply a pressure bandage to provide direct pressure and control bleeding. This allows you to do other things, such as coordinating aeromedical transportation.
 - a. Wrap the bleeding wound with 1 to 3 rolls of gauze bandage. Usually, lower leg wounds require 1 to 3 rolls, and higher limb wounds and body wounds require 4 rolls. The gauze bandage should be applied tightly to provide pressure to the bleeding wound.
 - b. Wrap the area with 1 to 3 rolls of self-adherent conforming bandage or the Trauma Wound Dressing/Hemorrhage Control Bandage.
 - c. If your first aid kit is not available, use whatever is available to apply a protective bandage with pressure over the bleeding site.
 - i. Field dressings, a cut or torn T-shirt, or cloth material can be used.
 - ii. Use surgical adhesive tape to secure the bandage or use strips of cloth or the field dressing tapes to tie the bandage in place.
5. Provide first aid for **MODERATE** or **SEVERE** bleeding.
 - A. Immediately apply pressure with your hand and continue to hold firm pressure while you or another handler gather your first aid supplies.
 - B. Quickly move your hand, scoop excess blood out of the wound, rapidly apply digital pressure to the source of bleeding, then pack hemostatic agent-impregnated gauze into or over the bleeding wound; then apply several 4 x 4 inch gauze sponges over the hemostatic gauze, and re-apply direct pressure for at least 5 minutes (if tactically feasible).
- C. Immediately cover the wound with 10 to 15 sterile 4 x 4 inch gauze sponges as for mild bleeding.
- D. Continue to apply firm pressure to the wound with the bandage between the wound and your fingers.
- E. Using direct pressure to stop bleeding takes time. **DO NOT** lift the bandage or remove the bandage to look at the wound, because this will break up the clot that is forming and bleeding will begin again.
- F. If the bleeding leaks through the gauze sponges or cloth you applied, apply more gauze sponges or cloth; **DO NOT** remove the original gauze or cloth.
- G. Without removing the gauze sponges, apply a bandage as described for mild bleeding to provide direct pressure and control bleeding.
6. Monitor the canine, request veterinary support.
 - A. Check to see that the bandage is still in place and the bleeding has stopped.
 - B. Observe for signs of pain and discomfort. If the bandage is too tight, it may interfere with circulation.
 - C. Immediately contact veterinary personnel and request further instructions.
7. Report, record, and evacuate.
 - A. Contact supporting veterinary personnel to request further instructions.
 - B. Initiate an aeromedical evacuation request for any canine with moderate or severe bleeding.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Understands the significance of severe bleeding.		
2. Provided first aid for MILD bleeding.		
3. Provided first aid for MODERATE or SEVERE bleeding.		
4. Monitored the canine, requested veterinary support.		
5. Made a written record of events.		
6. Activated aeromedical services.		

WD Handler Medical Care, Task 6

Basic Cardiac Life Support

Action: Perform Basic Cardiac Life Support (BCLS) on a canine.

Condition: A canine has collapsed, is unresponsive, has no pulse or heartbeat, and is not breathing or has gasping breathing efforts. BCLS must be initiated in the proper sequence within 30 seconds of determining cardiopulmonary arrest.

Standard: Performed BCLS in the proper sequence on a canine.

Performance Steps

- I. Immediately start chest compressions for any canine who is not responsive and not breathing or who has only agonal (gaspings) breathing efforts. Use the mnemonic, “CAB” to focus your attention on the Circulation/ Compression, Airway, and Breathing as you assess the canine.
 - A. Try verbally and physically to get the canine to respond. If the canine responds, he/she does not need BCLS.
 - B. If the canine is unresponsive, immediately call for help if others are nearby. Have someone request support from veterinary personnel.

CPR is as easy as

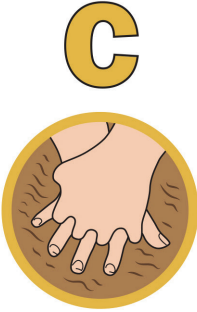


 <p>C</p>	 <p>A</p>	 <p>B</p>
<p>Compressions Push hard and fast on the WD's chest. Bend the dog's front leg so that the elbow is 1/3 of the way up the chest. Place your hands at this location.</p>	<p>Airway Tilt the head back and extend the neck to open airway. Remove any obstructions. Be careful not to get bitten.</p>	<p>Breathing Give Mouth-to-Nose resuscitation.</p>

Illustration courtesy of DHS OHA

NOTE: The most current CPR recommendations are to start chest compressions in any canine who is unresponsive and not breathing or has only gasping breathing efforts. “Look, Listen, and Feel” taught previously has been shown to delay chest compressions and leads to poor success with CPR. Clearing the airway is now a later step in CPR. The most critical action is immediate chest compressions.

NOTE: Be very careful not to get bitten! Even if the canine would not normally bite you, he/she may not have normal control of his/her actions. If your canine is conscious, he/she is NOT in cardiopulmonary arrest and does NOT need BCLS.

2. Perform **ASSISTED** BCLS with 2 or more people within 10 seconds of determining the canine has no pulse or heartbeat.
 - A. Determine with your assistant who will give the chest compressions and who will give “mouth-to-nose” breathing.

NOTE: BCLS on a large dog is physically demanding work. Be prepared (by practicing) to rotate positions every 2 minutes OR every 5 cycles of 30 compressions: 2 ventilations with other personnel with minimal interruption of chest compressions and rescue breathing.

- B. Position the canine.
 - a. Kneel next to the canine.
 - b. Place the canine on the side (lateral recumbent) with the spine against your body.
 - c. Find the widest portion (or highest point) of the rib cage/chest wall and place your hands at this point to perform chest compressions.
 - C. Position your hands. Place one hand on top of the other with all fingers closed together. Place your hands on the chest wall at the position you identified above.
 - D. Perform chest compressions.
 - a. With arms kept straight and in line with shoulders and elbows fully locked, apply a firm, downward thrusting motion.
 - b. Compress the chest.
 - i. Compress the chest wall approximately 1/3 the diameter of the chest.
 - ii. Use your upper body weight to generate downward force; **DO NOT** flex the elbows to generate force.
 - c. Compress the chest at a sustained rate of 100 to 120 compressions per minute, which is about 1 compression every half second.
 - d. Allow full chest recoil on decompression. Relax briefly but fully on the “up” stroke of chest compressions to allow blood to fill the heart before resuming compressions.

NOTE: Proper chest compressions are the most important part of BCLS. DO NOT stop chest compressions to direct or assist in other actions unless safety is an issue.
 - E. Perform rescue breathing using the “mouth-to-nose” method within 30 seconds of starting chest compressions.
 - a. Rapidly clear the airway.
 - b. “Mouth-to-Nose” rescue breathing:
 - i. Seal the canine’s mouth and lips by placing your hands around the lips, gently holding the muzzle closed.
 - ii. Place your mouth over the canine’s nose and forcefully exhale into the nose.
 - iii. Continue breathing for the canine at a rate of 10 breaths per minute (one breath every 6 seconds).
 - F. Rotate chest compressors every 2 minutes to reduce fatigue. Rotate personnel rapidly to decrease interruptions of chest compressions.
 - G. Check the canine’s response after 4 minutes of BCLS and every 4 minutes thereafter. Check for no more than 10 seconds before resuming chest compressions.
 - a. Check for voluntary breathing and a heartbeat or pulse.
 - b. If there is no voluntary breathing, heartbeat, or pulse, continue BCLS.
 - c. If there is a heartbeat or pulse, but no voluntary breathing, stop chest compressions but continue rescue breathing.

NOTE: Every time BCLS is stopped, blood pressure drops and blood flow and ventilation stop. Frequent stopping results in poor survival rates. Stop only every 4 minutes and only long enough to quickly check the patient’s breathing, pulse, and heartbeat.
3. Perform **UNASSISTED** BCLS with only one person within 10 seconds of determining BCLS is necessary.
 - A. Kneel next to the canine, position the canine, and perform chest compressions exactly as you do for assisted BCLS.
 - B. **DO NOT** attempt to breathe for the canine. Chest compressions are the most important part of unassisted BCLS and must not be interrupted.

- C. Maintain chest compressions at approximately 100 to 120 compressions per minute.
 - D. Check the canine's response every 4 minutes as directed above.
 - E. Continue BCLS as long as the canine does not have a pulse nor heart rate or is not breathing on his/her own or has only gasping breathing efforts.
4. Discontinue BCLS under the following circumstances:
 - A. The canine is successfully resuscitated (has a pulse and is breathing on his/her own).
 - B. The canine has not been resuscitated after at least 20 minutes of BCLS.
 - C. You are directed to stop BCLS by a more experienced or qualified handler or veterinary personnel.
 5. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request for any canine for whom CPR was initiated.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.



WD's spine against your knees, place one hand on top of the other with all fingers closed together. Find the spot to compress by bringing the WD's elbow back against their chest.

Photo courtesy of DHS OHA

Performance Measures	GO	NO GO
1. Immediately started chest compressions.		
2. Initiated ASSISTED BCLS within 30 seconds.		
3. Initiated UNASSISTED BCLS within 30 seconds.		
4. Discontinued BCLS under the appropriate circumstances.		
5. Reported the event, recorded treatment, and activated aero-medical services.		

WD Handler Medical Care, Task 7

Upper Airway Obstruction

Action: Provide First Aid to a canine for an upper airway obstruction.

Condition: A canine has signs of obstruction of the upper airway. First aid for an upper airway obstruction must be provided within 30 seconds. The canine may or may not have lost consciousness.

Standard: Provided first aid to a canine for an upper airway obstruction within 30 seconds.

Performance Steps

1. Recognize signs of an upper airway obstruction.
 - A. Playing with or chewing on an object, followed immediately by pawing at face or throat.
 - B. Acting frantic.
 - C. Trying to cough or choking.
 - D. Sudden onset of difficulty breathing, with abnormal “snoring” breathing sounds.
 - E. Blue or white or pale mucous membranes.
 - F. Evidence of objects blocking the oral cavity, such as foreign objects, blood, vomit, or bone fragments.
2. Provide first aid for an upper airway obstruction. **AVOID** getting bit.
 - A. Upper airway obstruction is a life-threatening situation. You must perform first aid as quickly as possible. The following steps should be completed in less than 30 seconds. The canine may or may not have lost consciousness.
 - B. Determine that the canine has an upper airway obstruction by checking the airway.
 - a. Gently tilt the head slightly back and extend the neck.
 - b. Look in the mouth and identify anything that is blocking the airway, such as vomit, a ball, a stick, clotted blood, bone fragments, or other object.
 - C. If you are able to visualize a foreign object, proceed as follows:
 - a. Use the “2 finger sweep” technique to remove fixed objects such as a bone, stick, blood, or tissue. Only perform “finger sweep” if there is zero risk of causing the obstruction to be pushed further down into the airway.
 - b. Use the modified Heimlich maneuver to remove smooth, foreign objects.
 - i. Grasp the canine around the waist so that the rear is nearest to you, similar to a bear hug.
 - ii. Place a fist just behind the ribs.
 - c. Use a gauze sponge to grasp the canine’s tongue and pull it forward to improve visualizing the mouth.
 - D. **AVOID** getting bit. Consider using other instruments or tools (e.g., long forceps, pliers, etc.) to grab objects instead of sticking your hands into a canine’s mouth.
 - i. Run your index and middle fingers into the canine’s mouth along the cheek and across the back of the throat.
 - ii. Remove any foreign objects that are visualized or felt.
 - iii. If unable to dislodge the foreign object, immediately transport canine to the nearest medical facility, as the airway may have become blocked due to swelling.

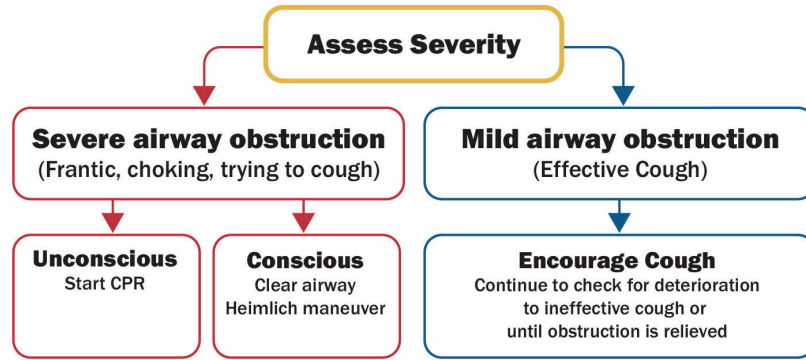


Illustration courtesy of DHS OHA

- iii. Compress the abdomen 5 times with quick upward thrusts.
- iv. Check the mouth to see if the foreign object is dislodged.
- v. Repeat the modified Heimlich maneuver 1 to 2 cycles (5 upward thrusts) if initial efforts are unsuccessful.

NOTE: NEVER attempt the Heimlich maneuver if sharp objects such as sticks or bones are present.

- D. If you are not able to see a foreign object, cannot remove a foreign object as directed above, or the trauma to the head, mouth, and neck are severe, the canine may need to be intubated or have an emergency tracheostomy/cricothyrotomy performed by medical personnel.
3. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation for any canine for which an upper airway obstruction was noted.

NOTE: Even if you are successful in removing a foreign object, veterinary examination is required. Internal injury could have occurred that may not be evident.

- C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Recognized signs of an upper airway obstruction.		
2. Provided first aid for a fixed upper airway obstruction.		
3. Provided first aid for a mobile upper airway obstruction.		
4. Reported the event and requested veterinary support.		
5. Made a written record of the event.		
6. Activated aeromedical services.		

WD Handler Medical Care, Task 8

Open Chest Wound

Action: Provide first aid for a canine with an open chest wound.

Condition: A canine has an open chest wound, with frothy blood at the wound site and labored breathing.

Standard: Recognized the signs of and provided first aid for a canine with an open chest wound.

Performance Steps

1. Open chest wounds are caused by objects that penetrate the chest wall, such as shrapnel, bullets, sticks, or metal pieces. When an open chest wound is present, the lungs collapse, causing severe breathing problems and possibly death. Immediate temporary closure of the open wound is necessary to prevent further air entering the chest.
2. Recognize the signs of an open chest wound:
 - A. Open hole in the chest.
 - a. May be obvious or concealed by hair or blood.
 - b. Probe any suspicious areas with a finger to see if the chest wall has been penetrated.
 - B. Object impaled in the chest.
 - C. Sucking or hissing sounds coming from a wound to the chest.
 - D. Frothy blood coming from a wound on the chest.
 - E. Labored or difficult breathing.
 - F. Chest not rising as it should with a breath.
 - G. Apparent pain with breathing.
3. Recognize the significance of an open chest wound.
 - A. An open chest wound is an immediate threat to life.
 - B. When the chest wall is penetrated and an open wound develops, air leaks into the chest cavity, which normally has a vacuum to allow the lungs to inflate as the chest wall expands during breathing. Air in the chest cavity is called pneumothorax. Canines with a pneumothorax cannot breathe normally because the lungs collapse when the vacuum is lost.
 - C. Immediate medical care for pneumothorax caused by an open chest wound:
 - a. Manage the open chest wound (covered in this task). Covering the open wound prevents more air from entering the chest cavity.
4. Provide immediate care for an open chest wound.
 - A. Immediately cover the wound.
 - a. Place your hand directly over any chest wound to provide immediate protection.



Immediately use your hand to cover the wound.

Photo courtesy of DoD

- b. If someone is available to help you, have that person place a hand over the wound.
- c. Check carefully for entry and exit wounds. If there is more than one wound, you will have to treat each wound separately.
- d. Check for the presence of a penetrating object.

NOTE: If a penetrating object is still in the chest, DO NOT remove the object.

- B. Apply an air-tight cover to the wound.
 - a. Obtain the occlusive adhesive dressing (chest seal) from the canine first aid kit.
 - b. Remove the plastic cover from the adhesive side of the chest seal and place the adhesive side of the seal directly over the center of the open chest wound. Apply pressure ensure the adhesive bonds to the chest wall.
 - i. Ideally, the hair over the chest wall would be clipped to improve adhesion of the seal; this will not be possible in an operational situation. **DO NOT** attempt to shave any hair with a razor, knife, or scalpel blade.
 - ii. **DO NOT** apply any lubricant to the skin around the open chest wound, as this will prevent adhesion of the chest seal.
 - iii. If you do not have a chest seal or need more than you have in your canine first aid set, use any piece of available plastic. In this case, use lubricant between the plastic and the canine's hair to improve contact and reduce air leaking.

NOTE: If a penetrating object is still in the chest, DO NOT remove the object. Do the best you can to form an air tight seal around the object. This may require use of both chest seals in your canine first aid set and/or pieces of plastic.



Apply a dressing to wound.



Apply pressure to seat the adhesive on the chest wall.

Photos courtesy of DoD

- C. Apply a field dressing over the chest seal/plastic.
 - a. Maintain pressure on the seal covering the wound.
 - b. With your free hand, shake the paper wrapper from the field dressing.
 - c. Place the dressing, white side down, directly over the seal covering the wound.
 - d. Secure the dressing by wrapping it around the canine's chest and tying the ends together.
- D. Apply a bandage over the field dressing by using a self-adherent conforming bandage wrapped around the entire chest. Apply this bandage with enough tension to keep the field dressing in place, but not so tightly that

the canine has difficulty breathing. Secure this bandage using surgical adhesive tape.

- E. Monitor for signs of a tension pneumothorax:
 - a. Rapid, shallow, and open-mouth breathing.
 - b. Acting agitated or unable to get comfortable.
 - c. Lack of drive and response to even basic commands, unwillingness to move.
 - d. Head and neck extended with elbows and upper front legs held out away from body (e.g., tripod position).
 - e. Reluctant to lie down.
 - f. Asynchronous breathing pattern (e.g., abdomen and chest move in opposite directions during inspiration).
 - g. Barrel-chested with minimal chest excursion and more abdominal movement.
 - h. Cyanotic (blue) gums (late finding).
 - i. Collapse.

NOTE: If the air tight seal is lost at any time during this process, start over. An air tight seal must be maintained at all times.

- 5. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Recognized the signs of an open chest wound.		
2. Recognized the significance of an open chest wound.		
3. Provided immediate care to seal an open chest wound.		
4. Treated pneumothorax.		
5. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 9

Open Abdominal Wound

Action: Provide first aid to a canine with an open abdominal wound.

Condition: A canine has an open abdominal wound. The canine requires immediate care.

Standard: Provided first aid to a canine with an open abdominal wound.

Performance Steps

1. Major organs such as the stomach, intestines, spleen, kidneys, urinary bladder, and liver are located in the abdominal cavity of a canine. These critical organs are susceptible to serious injury from ballistic wounds (e.g., gunshot, penetrating foreign body, shrapnel), blunt trauma (e.g., vehicular injury, falls), and blast injury (e.g., explosive devices and munitions). Severe bleeding is also possible with abdominal wounds. Infection due to contamination of the abdominal cavity is a serious risk. You must know how to provide first aid if your canine has an open abdominal wound to protect these organs and their blood supply.
2. Recognize signs of an open abdominal wound:
 - A. Obvious wounds in the abdominal area or an object impaled in the abdominal area.
 - B. Lacerations, cuts and scrapes, or bruising on the abdomen that appears to penetrate the abdominal wall.
 - C. Exposed or protruding intestines or abdominal organs.
 - D. Signs of bleeding from the abdomen, shock.
3. Provide first aid for an open abdominal wound.
 - A. Treat for shock if signs of shock are present.
 - B. Immediately cover the wound.
 - a. Immediately place your hand directly over the abdominal wound.
 - b. If someone is available to help you, have them place a hand over the wound.
 - c. Check for entry and exit wounds. If there is more than one wound, you will have to treat each wound separately.
 - C. Rinse the wound(s) by pouring 500 mL of sterile fluid over any exposed organs.
 - D. If there is a penetrating object still in the wound, **DO NOT** remove it. Leave the object where it is and work around it.
 - E. Apply a dressing to the wound.



Infection due to contamination of the abdominal cavity is a serious risk. You must protect exposed organs and their blood supply.

Photo courtesy of DoD

- a. Maintain pressure on the wound with your hand.
 - b. Apply the field dressing over the wound. When organs are exposed, soak the dressing with 500 mL of the sterile fluid.
 - c. Secure the dressing to the abdomen using the Trauma Wound/Hemorrhage Control bandage and surgical adhesive tape as needed. Wrap the bandage completely around the abdomen, secure enough to prevent movement of the dressing but not so tight as to cause discomfort or difficulty breathing.
- F. If internal organs are protruding through the wound, or if there is a large wound that exposes the abdominal contents, **DO NOT** try to push them back in. Wrap any exteriorized organs in the field dressing, dampen them with sterile fluid, and place them over the abdominal wound.
4. Report, record, and evacuate.
- A. Contact supporting veterinary personnel to request further instructions.
 - B. Initiate an aeromedical evacuation request for any canine with an open abdominal wound.
 - C. Keep a written record of the event. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Recognized the signs of an open abdominal wound.		
2. Provided first aid for an open abdominal wound.		
3. Reported, recorded, and activated aeromedical services.		



Wrap any exteriorized organs in the field dressing, dampen them with sterile fluid, and place the dressing over the wound



Gently wrap organs next to the body. **DO NOT** attempt to replace organs within the body cavity.

Photos courtesy of DoD

WD Handler Medical Care, Task 10

Circulation/Shock Therapy

Action: Initiate first aid for shock in a canine.

Condition: A canine has a traumatic injury or is seriously ill. Clinical signs of shock are present. The handler must rapidly, but safely, provide first aid to the canine for shock while preparing to evacuate the canine by aeromedical services.

Standard: Recognized the signs of and initiated first aid for shock in a canine without causing further harm to the canine.

Performance Steps

- I. Shock.
 - A. Shock is a very complex process. Shock is the body's response to a traumatic injury or severe illness, in which blood flow to vital organs like the brain, heart, lungs, liver, and kidneys is not adequate for survival because of lack of oxygen delivery to these organs.
 - a. Shock is progressive, meaning that if not treated quickly, shock may worsen. Even with effective treatment, shock can ultimately cause death.
 - b. Shock is a life-threatening situation. Emergency first aid must be provided immediately to improve chances of survival.
 - B. Common causes of shock in canines are:
 - a. Trauma with blood loss (motor vehicle accident, gunshot injury, shrapnel wound, blast injury).
 - b. Severe dehydration (vomiting, diarrhea).
 - c. Heat injury.
 - d. Anaphylactic reactions to insect stings.
 - e. Envenomation.
 - f. Poisoning.
 - g. Gastric Dilation-Volvulus (GDV).
 - C. Shock is always caused by something else. It is important to identify the primary cause, if possible, because first aid for the primary cause is just as important as first aid for shock. You may have to provide first aid for shock at the same time you are providing first aid for the primary cause.
 - a. Perform a primary survey of the canine to identify a primary cause for the shock.
 - b. Treat any other severe injuries while preparing to treat the shock.
 - i. Respiratory arrest, cardiopulmonary arrest.
 - ii. Arterial bleeding.
 - iii. Heatstroke.
 - iv. Allergic reaction to snake bite or insect sting.
 - v. Poisoning.
 - vi. Severe dehydration.
 - vii. GDV.
 - D. Recognize signs of shock.
 - a. Panting or labored breathing.
 - b. Bright red mucous membranes.
 - c. Increased heart rate.
 - d. Weak or absent femoral arterial pulse.
 - e. Prolonged CRT >2 seconds.

- f. Pale gray or blue mucous membranes.
 - g. Low body temperature.
 - h. Cold paws.
 - i. Weakness, collapse.
 - j. Depressed, acting “out of it,” lethargic, or comatose.
2. Provide immediate medical care for shock.
 - A. If oxygen is available, use a face mask or tubing and blow oxygen into the canine’s nose or mouth at a flow rate of 5 to 10 liters per minute.
 - B. If you must move the canine, do so very gently and try to keep the canine on a flat surface. The canine may have a spinal cord injury that is not obvious.
 - C. Manage hypothermia, wrap completely and remove the canine from cold environment.
 3. Monitor the canine and the treatment.
 - A. Monitor the canine. Continue to monitor vital signs and note whether the canine is responding to treatment.
 - B. Continue to provide first aid for any other medical problems found on the primary survey.
 4. Report, record, and evacuate.
 - A. Contact supporting veterinary personnel to request further instructions.
 - B. Initiate an aeromedical evacuation request for any canine with signs of shock.
 - C. Keep a written record of the event. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Understands the significance of shock.		
2. Recognized common causes of shock.		
3. Initiated treatment for the cause of shock.		
4. Recognized signs of shock.		
5. Managed hypothermia.		
6. Monitored the canine and the treatment.		
7. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 11

Hyperthermia/Heat Injury

Action: Provide first aid for heat injury in a canine.

Condition: A canine is exhibiting clinical signs of heat injury.

Standard: Recognized the signs of and provided first aid for heat injury in a canine without causing further harm to the canine.

Performance Steps

- I. Heat injuries.
 - A. Heat injuries result when the body's natural cooling mechanisms fail in response to internal overheating.
 - B. People regulate body temperature mostly by sweating. Since dogs do not sweat effectively, when their body temperatures exceed ambient temperatures, they dissipate heat primarily by panting. If a canine is unable to cool-off enough, his/her internal temperature rises and may lead through different stages of heat injury.
 - C. Normal body temperature for a canine is 100.5 °F to 102.5 °F. However, absolute temperature can range. Most canines work normally at temperature ranges of 105 °F to 107 °F with no ill effect, due to acclimation.
 - D. The progression of heat injuries can be quite rapid, sometimes taking only a few minutes. Occasionally, there is little or no warning and the progression is so rapid that the canine might already be suffering heatstroke when the situation is discovered.
 - E. Short-term effects on a canine suffering from a heat injury may include shock, organ damage, or death. Long-term effects may include brain damage and the increased possibility of recurrence of a heat injury.
- F. Immediate first aid is required for any canine with suspected heat injury.
2. Causes of heat injury are divided into environmental causes and exertion causes.
 - A. Environmental causes are due to exposure to high environmental temperature and humidity.
 - a. Exposure to high heat, humidity, or both.
 - b. Confinement to a small, hot space such as a crate, kennel run, or vehicle.
 - c. Poor acclimation to heat and humidity.
 - d. Inadequate water intake.
 - B. Exertion causes are due to increased body temperature that develops with exercise or work.
 - a. Strenuous work or exercise (worsened by hot, humid, or hot and humid environments).
 - b. Existing or undiagnosed disease or illness.
 - c. Medications or drugs.
 - d. Age.
 - e. Previous heat injury.
 - C. The combination of exposure to high environmental temperatures and exertion can markedly increase the risk of heat injury.

3. Heat injury prevention.

- A. Canines rely on their handlers to take care of them and make decisions for them, especially in extreme environments. Take care of, monitor, and know your canine!
- B. Acclimation. Follow the human rules of acclimation. Increase workload and exposure to the environment gradually over a 14 day period. Use an acclimation period if the canine is recovering from an illness.
- C. Hydration.
 - a. Make sure your canine is properly hydrated by allowing frequent water breaks.
 - b. Ensure your canine always has access to water, whether in his/her kennel, exercising, or resting.
 - c. Dehydration is difficult to detect. One method is to check the canine's mucous membrane color and mucous membrane moistness in the tissue covering the gums in the mouth:
 - i. Gently pull the top lip up or the bottom lip down to expose the gums.
 - ii. Note the moistness of the gums by gently touching your finger to the exposed gum.
 - iii. Normal mucous membranes are moist or slippery.
 - iv. Mucous membranes that are dry or tacky to the touch are abnormal and suggest dehydration.
 - d. Dehydration makes your canine more susceptible to heat injury and causes decreased performance.
 - e. Allow your canine to drink when you drink—typically a small amount every 10 to 15 minutes in an extreme or high activity environment.
 - f. Use fresh water or veterinary-approved electrolyte solution.

D. Canines need a physical training program to remain in shape. Out of shape canines are more prone to heat injuries.

- E. **DO NOT** confine a canine in a small, poorly-ventilated, hot area at any time.

NOTE: Large areas of asphalt are especially hot. Take extra precautions if your canine is working, exercising, kenneled, or in a trailer near airstrips or paved roads.

- F. If the canine has had a prior heat injury, consider ceasing exercise when the temperature reaches 90 °F. For all other canines, consider ceasing exercise when the temperature reaches 95 °F.

NOTE: Work/rest cycles have not been developed for canines. Use this guide unless mission requirements supersede it. Check local policy letters to verify time and temperature requirements for working your canine team.

- G. **DO NOT** use muzzles unless required for safety reasons. Loosen muzzles when possible to allow the canine to pant more easily. A canine's cooling mechanism is the ability to pant.

4. Recognize signs of heat injury.

Mild heat injury (heat stress) is characterized by development of excessive thirst, discomfort associated with physical activity, and sodium and chloride abnormalities, but with controlled panting (i.e., the patient can control or reduce panting when exposed to a noxious inhalant such as alcohol or when offered food or water). Generally, treatment of heat stress involves removing the patient from the source of heat, stopping exercise, and cooling by use of fans or movement to an air-conditioned area. Close monitoring for several hours is necessary to ensure heat stress does not progress, or rebound low body temperature (hypothermia) does not develop. Key parameters to monitor, in addition to frequent body temperature measurement, include changes in mentation, anxiety, or restlessness.

Moderate heat injury (heat exhaustion) is present when the signs of heat stress are present, as well as weakness, anxiety, and uncontrolled panting (i.e., the patient cannot reduce panting when exposed to a noxious inhalant). Generally, treatment of heat exhaustion is the same as for heat stress, but more aggressive cooling measures are often necessary. The canine must be removed from the source of heat and all activity must be stopped. Cooling by use of fans or movement to an air-conditioned area should be done if possible. The hallmark treatment for moderate and severe heat injury is to thoroughly soak the hair to the skin with cool water in conjunction with application of cooling fans or A/C to reduce core body temperature. Close monitoring for several hours as stated for heat stress is necessary to ensure heat exhaustion does not progress, or rebound hypothermia does not develop.

Severe heat injury (heatstroke) is present when signs of heat exhaustion coupled with varying degrees of central nervous system (CNS) abnormalities. The most common CNS abnormalities include changes in mentation and level of consciousness (e.g., obtunded, stupor, coma), seizures, abnormal pupil size, blindness, head tremors, and ataxia.

Heatstroke is a life-threatening condition. It is characterized by a severe increase in core temperature and widespread, multiple organ injury with risk of progression to multiple organ failure. No specific body temperature defines heatstroke in veterinary patients; however, temperatures as low as 105.8 °F have been associated with pathology. Laboratory studies using animals have established that heat directly induces tissue injury. Handlers must be prepared to rapidly recognize and treat heat-related illnesses, because the severity of organ injury related to heat injury is directly related to the length of time the patient is hyperthermic.

Retrospective veterinary studies report multiple, serious complications and high fatality rates in heatstroke patients despite proper treatment. These cases are challenging and require intensive treatment and monitoring. With aggressive medical therapy and intensive nursing care, many of these patients can successfully recover.

Emergency care must be performed immediately to improve outcome. If the canine is not breathing or breathing is not adequate, start rescue breathing and seek a higher level of care. Canines with clinical signs of heatstroke (manifested by neurological deficits) require emergency cooling measures. The rate of cooling should be as rapidly as possible until the body temperature is 103.5 °F to 104 °F. The most practical, expedient, and rapid method to reduce body temperature is an ice water immersion or soaking the canine to the skin with cool water. The key is to soak the entire patient as rapidly as possible through the hair, soaking the skin thoroughly. Additional cooling methods can be used to supplement wetting the skin thoroughly. Fans or A/C should be directed on the canine to facilitate convective surface cooling, remembering that the skin must be thoroughly wet for fans to be effective.

Once the body temperature is less than 104 °F, the rate of cooling can be reduced to avoid rebound hypothermia. Ancillary cooling measures can be removed (e.g., remove fans, return room temperature to normal), and the patient's skin can be dried. At this point, all cooling efforts must cease, continuous temperature monitoring must continue, and the handler should be prepared to actively warm the patient to prevent an excessive drop in body temperature (rebound hypothermia) from aggressive cooling measures. Although warming a patient with a temperature of 100 °F may seem counterintuitive, the handler should anticipate a period of rebound hypothermia. Monitor for and treat concurrent problems. Canines with heatstroke often present in shock and may develop sustained hypotension.

- A. Mild heat injury (heat stress).
 - a. Heavy, controlled panting.
 - b. High rectal temperature, usually 105 to 106 °F.
 - c. Fast, strong pulse.
 - d. Slightly decreased performance.
 - e. Normal otherwise.

NOTE: Controlled panting means the canine can stop panting when an alcohol-soaked gauze is put in front of the nose or when the canine becomes interested in something. Uncontrolled panting means the canine cannot stop panting even when offered a treat or exposed to alcohol.

- B. Moderate heat injury (heat exhaustion).
 - a. Very high rectal temperature, usually 106 to 108 °F.
 - b. Uncontrolled panting.
 - c. Fast, strong, OR weak pulse.
 - d. Failure to salivate.
 - e. Tacky or dry nose and mouth.
 - f. Unwillingness to work or exercise; acts tired.
 - g. Loss of appetite.
 - h. Unresponsive to handler and commands.
 - i. Staggering, weakness, depressed, or acting “out of it.”
 - j. Bright red mucous membranes.
- C. Severe heat injury (heatstroke).
 - a. Extremely high rectal temperature, usually over 108 °F.
 - b. Body is hot to the touch.
 - c. Vomiting.
 - d. Pale mucous membranes.
 - e. Abnormal mentation or level of consciousness – completely “out of it,” seizures, or coma.
 - f. Diarrhea, sometimes with blood (bright red blood or dark, tarry feces).
 - g. Shock.
 - h. Death.

- 5. Provide first aid for heat injury.
 - A. First aid for mild heat injury (heat stress) is to cease working the canine and cool the canine externally.
 - a. Immediately cool the canine using one or more of the following methods:
 - i. Spray or pour cool water on the canine. **SOAK THE CANINE TO THE SKIN!!**
 - ii. Move the canine to a shaded area if outdoors or into a cool building.
 - iii. Circulate cool air near the canine using fans.
 - iv. Loosen the muzzle and collar. Remove these if possible and safe. Remove any vests or harnesses.
 - b. Monitor and treat for shock, if shock develops.
 - c. Monitor vital signs every 5 minutes.
 - d. Discontinue cooling efforts when the rectal temperature reaches 103 °F.
 - B. First aid for moderate (heat exhaustion) and severe heat injury (heatstroke) is to cease working the canine, cool the canine, and monitor the canine for heat injury.
 - a. Cool the canine as for mild heat injury.
 - b. Monitor and treat for shock, if shock develops.
 - c. Monitor vital signs every 5 minutes.
 - d. Discontinue cooling efforts when the rectal temperature reaches 103 °F.
 - e. Initiate an aeromedical transportation request.
- 6. Report, record, and evacuate.
 - A. Inform the Kennel Master of the situation, and contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Understands what a heat injury is and why it's dangerous.		
2. Knows the causes of heat injury.		
3. Knows how to prevent heat injury.		
4. Recognized the signs of mild, moderate, and severe heat injury.		
5. Provided first aid for mild, moderate, and severe heat injury.		
6. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 12

Hypothermia/Cold Injury

Action: Provide first aid to a canine for hypothermia.

Conditions: A canine is exhibiting clinical signs of hypothermia.

Standards: Identified and provided first aid to a canine for hypothermia without causing further harm to the canine.

Performance Steps

1. Hypothermia commonly develops in canines with traumatic injuries or severe illness, and in canines exposed to cold environmental temperatures. Hypothermia complicates the underlying medical problem and increases mortality. It is critical to prevent hypothermia and treat hypothermia promptly when it develops. Canine handlers must identify factors that lead to hypothermia, take protective measures, and provide first aid in the event their canine experiences hypothermia.
2. Identify causes of hypothermia.
 - A. Hypothermia should be expected in canines who have suffered any type of trauma, have major illness, or have been exposed to low environmental temperatures with impaired ability to regulate body temperature (e.g., given tranquilizers, sedatives, or anesthetics).
 - a. Primary hypothermia is caused by exposure to low environmental temperatures.
 - b. Secondary hypothermia has many causes, including low body temperature due to trauma, toxicity, underlying illness, anesthesia and surgery, and other factors. Regardless of the type of hypothermia, the mechanisms that lead to hypothermia are excessive heat loss, decreased heat production, or both.
 - B. If any risk factors are identified, take protective measures to prevent hypothermia from developing and treat hypothermia that develops.
3. Several risk factors make a canine more susceptible to cold injury.
 - a. Inadequate acclimation.
 - b. Prior cold injuries.
 - c. Fatigue.
 - d. Inactivity.
 - e. Geographic origin.
 - f. Medications.
 - g. Poor nutrition.
 - h. Dehydration.
4. Clinical signs of hypothermia.
 - A. Hypothermia is generally defined as a body temperature that is 97 °F or lower.
 - B. Canines with hypothermia may be disoriented, appear to be “out of it,” or may be unconscious. Breathing is usually slow. Pulses may be rapid or slow, but tend to be weak. Shivering is often present in mild-to-moderate hypothermia, but is lost once severe hypothermia develops. Canines with hyperthermia tend to be weak and may collapse.
 - C. Hypothermia can be mild, moderate, or severe and is classified as mild, moderate, severe, or profound.

- D. Complications related to hypothermia include blood-sugar, electrolyte, and acid-base abnormalities; bleeding disorders, rapid heart rate, and high blood pressure due to slow heart rate and low blood pressure; and heart rhythm abnormalities.
- E. Treatment of hypothermia can cause complications to develop, such as “afterdrop” and “rewarming shock.” Careful warming and close monitoring are essential when managing hypothermic patients.
 - a. “Afterdrop” is the continued decrease in the canine’s temperature as warming is provided and is due to the return of cold peripheral blood to the central circulation. To prevent “afterdrop,” it is important to warm the canine’s trunk (chest and abdomen), not the extremities.
 - b. “Rewarming shock” develops with excessively rapid warming and is due to the sudden development of systemic vasodilatation. This vasodilatation causes hypotension at a time when the circulatory system may not be able to react.
- 5. These are two types of cold injuries and their clinical signs:
 - A. Hypothermia is defined as a body temperature that is less than 97 °F.
 - B. Frostbite is freezing of tissues. Signs of frostbite include the following:
 - a. Canine’s tissues are very cold to the touch.
 - b. Canine’s skin appears gray, white, or waxy.
 - c. Blistering occurs in more advanced cases.
 - d. The tips of the canine’s ears, scrotum, tail, lower legs, paws, and toes are the most common areas affected by frostbite.
 - e. Frostbite may be most noticeable at the toenail beds and/or the tip of the ears.
- 6. Provide first aid for hypothermia. Hypothermia is progressive and gets worse as time passes.

Take immediate action as soon as you recognize the onset of hypothermia!

- A. Assume hypothermia will develop in any patient with risk factors and prevent hypothermia from developing if possible.
 - B. Hypothermic patients must be warmed rapidly and carefully and with anticipation of possible complications. Rewarming can be by passive surface warming, active surface warming, active core warming, or a combination of these. During mission operations, passive surface warming will likely be the only method available to handlers.
 - a. Passive surface warming involves the use of external wraps, typically blankets or towels, to prevent heat loss while the animal “self-generates” heat. This method is typically effective for patients with mild hypothermia and adequate blood volume. Remove the canine from the wet surface and dry them off if wet.
 - b. Active surface warming involves the use of externally-applied heat sources, such as forced-air devices, warm water bottles, heating pads, lamps, or dryers, to provide heat to offset the patient’s inability to generate heat. If available, active warming is preferred for patients with moderate to severe hypothermia.
- NOTE: DO NOT place heating sources in DIRECT contact with the canine’s skin or hair; this may cause significant skin burns.**
- c. The current recommendation is to warm hypothermic patients to a temperature of 100 °F and then cease all warming methods except passive warming.
 - d. Avoid wind exposure. Wind combined with cold temperatures creates a wind chill factor that is actually colder than the temperature on the thermometer.
 - e. Avoid contact with frozen objects.
 - f. Avoid fatigue. Use work/rest cycles to allow for re-warming.

- g. Allow the canine time to acclimate to the environment and workload gradually.
 - i. Partial acclimatization takes 4 to 5 days.
 - ii. Full acclimatization takes 7 to 14 days.
 - h. Address nutritional needs by increasing the canine's caloric intake.
 - i. During treatment of hypothermia, measure the rectal temperature every 5 to 10 minutes.
7. Provide first aid for frostbite.
- A. If frozen part has the potential of re-freezing and will not be actively thawed:
 - a. Apply bulky, clean, and dry gauze or sterile cotton dressings to the frozen part and between the toes.
 - b. If possible, the canine should not use the frozen extremity (or extremities) for walking.
 - c. If the canine must use a frozen extremity for walking, pad and splint the extremity to prevent additional trauma.
 - B. If the frozen part can be kept thawed and warm with minimal risk of refreezing until evacuation is completed, warm the affected area by one of the following methods:
 - a. Rapid field rewarming: field rewarming by warm water bath immersion can and should be performed if the proper equipment and methods are available and definitive care is more than 2 hours away.
 - b. Avoid heat sources such as fire, space heater, oven, etc., because they increase the risk for thermal injury.
 - c. Heat water to 98.6 –102.2 °F. If a thermometer is not available, heat water to a temperature whereby the handler may keep his/her hands in the water for at least 30 seconds without getting scalded.
 - d. Water will cool. Therefore, a handler must be careful to keep the water warm and at the correct temperature.
 - e. Warm the frozen part until the body part becomes soft and pliable and develops a reddish-purplish discoloration to the skin. This generally takes about 20 to 30 minutes, depending on the size of the area.
 - f. Allow the body part to air dry and blot dry with a clean towel. **DO NOT** rub.
 - g. Protect from refreezing and trauma.
 - h. Apply topical aloe vera cream or gel.
 - i. Apply dry, bulky dressings.
 - j. Elevate the affected body part if possible.
 - k. Ensure systemic hydration.
 - l. Avoid walking on thawed extremity (unless only distal toes are affected).
8. Report, record, and evacuate.
- A. Contact supporting veterinary personnel to request further instructions.
 - B. Initiate aeromedical evacuation.
 - C. Keep a written record of the event. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Identified causes of hypothermia.		
2. Described hypothermia, clinical signs, and complications.		
3. Provided first aid for hypothermia using passive warming methods.		
4. Reported, recorded, and activated aeromedical services		

WD Handler Medical Care, Task 13

Aeromedical Evacuation

Action: Initiate the medical evacuation of a canine.

Conditions: A canine is very ill or has suffered significant trauma. First aid or life-saving measures have already been performed. The situation is serious enough to warrant medical evacuation.

Standard: Initiated a medical evacuation of a canine.

Performance Steps

Canines may require medical evacuation using human medical evacuation resources. Note that the canines should be evacuated only after human casualties have been transported.

NOTE: canines, when injured or ill, may be evacuated by any transportation means available. The Component is responsible for the evacuation of the animal. Use of dedicated medical evacuation assets (air and ground ambulances) is authorized based on mission priority and availability. When possible, the handler should accompany the animal during the evacuation.

- I. Familiarize yourself with your Component's evacuation plan.
 - A. Components with canines should have an evacuation plan established and in effect prior to an emergency requiring medical evacuation.
 - B. An evacuation plan may be a standard operating procedure, or the plan may be designed for a specific operation.
 - C. Evacuation plans should identify:
 - a. Primary and alternate channels for submitting medical evacuation requests.
 - b. Primary and alternate evacuation routes.
 - c. The type of transportation available for evacuation (e.g., litter, ground, air).
 - d. Location and POC information of the predetermined supporting veterinary unit.
 - e. Primary handler and alternate escorts for an injured canine.
 - D. As a canine handler, you need to be familiar with your unit's evacuation plan, so that you will know what to do when a situation requires a medical evacuation.
 - E. As the canine's handler, you will travel with your canine when medical evacuation is required. If the assigned handler is a casualty, the unit should send an escort with the canine until another handler is available to assist in the care and transport of the canine.
 - F. Treat the canine's medical needs as required or instructed. Relay important information to appropriate personnel as required, provide restraint as necessary, and follow instructions for medical evacuation given to you by your agency and veterinary services personnel.
 - G. If canines and injured personnel are on the same transport asset (ground or air), the crew will always bring the canine to the nearest life-saving facility established for the human casualties. Therefore, predetermined veterinary support may not be available, even though veterinary support may have been planned.

H. The veterinary healthcare team will remain the canine's primary provider and every effort should be made to contact the supporting veterinary unit for guidance immediately upon stabilization of the injured canine.

Performance Measures	GO	NO GO
1. Familiarized with unit evacuation plan.		
2. Contacted senior person present and supporting veterinary personnel.		
3. Collected all information required for request.		
4. Prepared to activate aeromedical services.		



Helicopters can provide quick transport for a canine in need.



Photos courtesy of DHS

WD Handler Medical Care, Task 14

Splint or Soft Padded Bandage to a Fracture of the Limb

Action: Apply a splint or soft padded bandage to a fracture of the limb of a canine.

Condition: It is suspected that the canine has a fractured limb. The canine needs to be evacuated to the closest veterinary facility. Another canine handler is available to assist with positioning and restraint of the canine.

Standard: Applied a splint or soft padded bandage to a leg of a canine without causing further harm to the canine.

Performance Steps

1. The possibility always exists that your canine may break a leg, and, as a handler, you should know how to prepare your canine for transport to the closest veterinary facility. Immobilizing the fracture will improve patient comfort and help prevent injury to the blood vessels and nerves located near the long bones of the legs.
 2. Recognize basic fracture types.
 - A. Open fracture.
 - a. Any open wound near a fracture or any part of the broken bone is through the skin and poking out.
 - b. Serious risk of deep tissue and bone infection.
 - B. Closed fracture. A closed fracture has no open wound and no protruding bone.
 3. Recognize signs of a fractured limb.
 - A. The canine appears to be in pain.
 - B. The canine will not put any weight on the affected limb or is barely touching the toes to the ground.
 - C. Swelling and bruising of the affected limb.
 - D. The limb may look deformed, out of its normal shape.
 4. Understand limitations to splint application.
 - A. Only fractures below the knee and elbow should be splinted. This is because the bones above the knee and elbow are extremely difficult to splint properly due to the bones' size, location, and movement. Even splints applied by professional medical personnel with extensive orthopedic experience can worsen the fracture, increase pain, and increase risk of injury to nerves and blood vessels near the fracture.

NOTE: Only fractures below the knee (of the tibia or paw bones) or below the elbow (of the radius, ulna, or paw bones) should be splinted.
 - B. For optimal immobilization, stabilize one joint above and one joint below the fracture (e.g., for lower hind leg (tibial fracture), place splint to stabilize both the knee joint and ankle (tarsal) joint).
5. To be considered an open fracture, a bone does not always need to be sticking out at the point of the break; rather, it could simply be an open wound that overlies or is in close proximity to a fractured bone.
6. The limb may be in an abnormal or awkward position.

- C. **DO NOT** try to straighten a fractured limb! Apply the splint to the limb with the limb in whatever position you find it.
 - D. Handle a canine with a fractured limb with extreme care and caution.
5. Apply a universal splint to a fracture of the lower front leg or lower hind leg.
 - A. If an open wound is present, flush the wound with 500 mL of sterile fluid, then cover the wound with a non-adherent pad. Secure the non-adherent pad to the leg using a gauze bandage wrapped lightly around the limb.
 - B. Apply 1-inch wide tape stirrups directly to the hair on both the inside and outside of the leg. Ensure that the ends of the tape extend about 4 to 6 inches below the foot. Fold the tape back on itself about 1/2 to 1 inch at the very end.
 - C. Apply 3 rolls of rolled gauze, wrapping the cast padding around the limb. Start at the toes and wrap up the leg, going past the fracture site.
 - D. Gently conform the universal splint to the fractured limb. Place the splint on the lateral (outside) or caudal (back) aspect of the limb, centered over the fracture site, with the long aspect of the splint oriented along the long axis of the leg. Bend/mold the splint as best possible to wrap around the limb for increased stability. Ensure the splint covers both the joint above and the joint below the fracture.
 - E. Secure the universal splint to the limb using elastic, self-adherent wrap, and tape. Wrap from the toes up the leg. Overlap the wrap by 1/4 to 1/2 inch on each "turn." Wrap the tape snugly but not so tight as to cut off circulation.
 6. Monitor the canine.
 - A. Ensure that the bandage/splint stays clean and dry.
 - B. Note if the canine's pain and/or discomfort level rises.
 7. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.



Applying the splint.



Apply 3 rolls of gauze, then wrap this over with an outer layer of self-adhering flexible wrap. Photos courtesy of DoD

Performance Measures	GO	NO GO
1. Understands the importance of bandaging for transportation.		
2. Knows the difference between open and closed fractures.		
3. Recognized the signs of possible leg fractures.		
4. Understands the limitations of splints.		
5. Applied a universal splint properly over cast padding.		
6. Monitored the canine for pain and splint complications.		
7. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 15

Eye Irritation or Trauma

Action: Provide first aid to a canine with eye irritation or trauma.

Condition: A canine has signs of eye irritation or trauma. Another handler is available to assist with positioning and restraint of the canine, as needed.

Standard: Provided first aid to the affected eye without causing further irritation or trauma to the canine.

Performance Steps

1. Canines may have mild eye irritation or suffer significant eye trauma. Handlers must recognize signs of eye irritation and trauma and know how to provide first aid for eye problems.
2. Recognize the signs of eye irritation.
 - A. Excessive tearing.
 - B. Rubbing of the eye or face.
 - C. Excessive squinting or holding the eyelids shut.
 - D. Excessive redness of the white part of the eye.
 - E. Milky white discoloration of the outer clear part of the eye.
 - F. Excessive discharge (greenish, yellowish, bloody) from the eye.
3. Provide first aid for eye irritation.
 - A. If eye irritation is observed, immediately contact supporting veterinary staff for guidance. If none can be reached, administer first aid.
 - B. Have the canine muzzled, positioned, and restrained.
 - a. Sitting or lying upright on chest.
 - b. Ensure the canine's head is restrained enough to prevent sudden head movement.
 - C. Remove dry debris from around the eye.
 - a. Dampen a gauze sponge with sterile eye rinse.
 - b. Gently stroke the eyelids and surrounding area. **DO NOT** rub the eye directly.
 - c. Allow the canine to close the eye during this procedure.
 - D. Flush moist secretions, dirt, blood, and discharge from the eye with approximately 1/4 bottle of sterile eye rinse.
 - a. Use the heel of the hand holding the eye flush to pull the upper eyelid open.
 - b. Use the thumb of the hand holding the jaw to pull the lower eyelid downward, exposing the inside part of the lower eyelid.
 - E. Apply sterile eye ointment to the affected eye.
 - a. Squirt a small amount onto a gauze sponge to remove possible contaminants.
 - b. Use the heel of the hand holding the medication to pull the upper eyelid open.
 - c. Use the thumb of the hand holding the jaw to pull the lower eyelid downward, exposing the inside part of the lower eyelid.
 - d. Administer the medication.
 - i. To prevent contamination or injury, **DO NOT** allow the tip of the tube to touch the eye or any other surface.

- ii. Squeeze the ointment tube to lay a thin strip of ointment (1/4 to 1/2 inch long) directly on the inside part of the lower eyelid.
 - iii. Allow the canine to blink. If the canine does not blink, gently move the eyelids together to spread the ointment over the eye.
4. Recognize the signs of eye trauma.
 - A. Blood or bruising in or around the eye.
 - B. Cuts or wounds to the eye or surrounding skin.
 - C. Foreign object in or around the eye.
 - D. Displacement of the eye from the socket.
 5. Provide first aid for eye trauma.
 - A. Clean and rinse the eye as directed above.

NOTE: DO NOT pull on the eye if it is displaced. DO NOT try to put the eye back in the eye socket if it is displaced. DO NOT try to remove any object that seems to be embedded in the eye. These actions may cause more damage to the eye.
 - B. Gently coat the eye with the entire contents of one tube of sterile antibiotic eye ointment.
 - C. Cover the eye with 5 to 8 gauze sponges that have been moistened with sterile eye rinse.
 - D. Apply a bandage over the gauze to protect the eye.
 - a. When bandaging the head and neck, **DO NOT** restrict breathing, swallowing, or eating.
 - b. When bandaging the eye, ears may be left uncovered if not wounded. If the ear is covered, mark the outline of the ear flap or write “ear flap up” or “ear flap down” on the bandage to prevent anyone who removes the bandage from accidentally cutting the ear.
 6. Check tightness; you should be able to slide 2 fingers under each edge of the bandage. If too tight, re-bandage with less tension.
 7. Observe for difficulty swallowing and for choking or discomfort. If observed, re-bandage with less tension.
 8. Consider covering the uninjured eye to reduce the level of anxiety as well as reduce “sympathetic” movement of the injured eye.
 9. If a penetrating eye injury is noted or suspected, protect the eye from external pressure and stabilize any impaled object to prevent movement during extraction.
 6. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Recognized signs of eye irritation.		
2. Provided first aid for eye irritation.		
3. Recognized signs of eye trauma.		
4. Provided first aid for eye trauma.		
5. Informed veterinary staff.		
6. Recorded treatment.		
7. Activated aeromedical services.		

WD Handler Medical Care, Task 16

Burn Injury

Action: Provide first aid to a canine for a burn.

Condition: A canine has suffered skin burns.

Standard: Provided first aid to a canine for a burn without causing further harm to the canine.

Performance Steps

- I. Assess the severity of the burn. Burns are classified in degrees. The more layers of skin affected by the burn, the higher the degree classification; the higher the degree classification, the more serious the burn injury. Consider burns may not be readily evident in canines because their hair covers skin lesions effectively. Hot liquids seep under the hair and so only an area of wet, oily, or greasy hair may be noticeable. A canine often reacts to a painful burn by displaying agitation and continually biting, licking, or rubbing the affected area. Look for these behavioral signs to help support any suspicion that a canine may have been burned.
 - A. **First degree (superficial)** burn: redness and pain, similar to a sunburn.
 - B. **Second degree (partial thickness)** burn: red or mottled appearance, swelling, extreme hypersensitivity leading to pain. The area may appear wet and weeping due to fluid swelling up below the skin.
 - C. **Third degree (full thickness)** burn: dark and leathery appearance. Skin surface is dry. There is no pain as the nerve endings are destroyed. If any hair remains, it will pull out easily.
2. Provide immediate medical care for other injuries.
 - A. Most canines with burns also have other injuries that may be more life-threatening.
 - B. Perform a primary survey of the dog and take immediate action, if required.
 - C. Immediately remove the canine from the burning source and stop the burning process.
 - D. Remove all harnesses, collars, vest, booties, etc. Avoid pulling away any items that are melted and have stuck to the canine's skin.
3. Provide first aid for a burn.
 - A. Local and minor burns: superficial or partial thickness <20 percent total body surface area (TBSA):
 - a. Consider cooling burned skin with cool to cold water (sterile fluid if available) within 20 minutes of burn incident.
 - b. **DO NOT** use ice, ice water, or iced saline on burned skin.
 - c. Cover the burn area with dry, sterile dressings and initiate measures to prevent heat loss and hypothermia once cool irrigation is completed (if performed).
 - B. Severe burns >20 percent TBSA.
 - a. Avoid actively cooling (i.e., irrigation, application of ice, etc.) burns >15 percent TBSA to prevent inducing hypothermia.
 - C. **DO NOT** attempt to clip hair from the burned skin.

- D. Apply a dry, sterile non-adherent dressing to the burn and loosely bandage the affected area with dry, sterile bandage material.
- 4. Monitor the canine.
 - A. Ensure that the bandage stays clean and dry.
 - B. Note if the canine's pain or discomfort level rises.
- 5. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.

Performance Measures	GO	NO GO
1. Assessed the severity of the burns based on signs.		
2. Provided immediate medical care for other injuries.		
3. Provided first aid for a burn using sterile, non-adherent pad and bandage.		
4. Monitored the canine.		
5. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 17

Gastric Dilatation-Volvulus (GDV)

Action: Provide first aid for gastric dilatation-volvulus in a canine.

Condition: A canine has severe abdominal distention, retching or non-productive vomiting, and signs of pain. First aid for gastric dilatation-volvulus (GDV) must be initiated and preparations must be made to evacuate the canine to a medical facility.

Standard: Initiated first aid on a canine for GDV.

Performance Steps

1. Recognize the three hallmark signs of GDV.
 - A. Varying degrees of abdominal distention from stomach filling with air, food, and fluid.

NOTE: Many medical problems cause abdominal distention. It can be difficult to tell the difference between these and GDV. However, if abdominal distention is present in addition to these other signs, assume GDV is present and initiate first aid as directed.
 - B. Nonproductive retching, attempted vomiting without result, retching a small amount of saliva, “dry heaves,” excessive salivating.
 - C. Signs of pain, if the canine is conscious:
 - a. Grunting, especially when the stomach or abdomen is palpated.
 - b. Anxiety, which is commonly noted as pacing, anxious stares, and inability to get comfortable when lying down.
 - c. Panting.
2. Recognize signs associated with shock.
 - A. Pale, grey, or blue mucous membranes.
 - B. Prolonged CRT.
 - C. Rapid heart rate.
 - D. Weak, rapid pulse.
 - E. Weakness, collapse.
 - F. Depression, lethargy.
3. Treat shock.
 - A. If oxygen is available, use a face mask or tubing and blow oxygen into the canine’s nose or mouth at a flow rate of 5 to 10 liters per minute.
4. Monitor the canine and your treatment.
 - A. Continue to monitor vital signs and note whether the canine is responding to treatment.
 - B. Continue to monitor the canine’s abdominal area for further distention.
5. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Recognized the three hallmark signs of GDV.		
2. Recognized signs associated with shock.		
3. Initiated treatment for shock first.		
4. Monitored the canine and treatments.		
5. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 18

Pad or Paw Injury

Action: Provide first aid to a canine with a pad or paw injury.

Condition: A canine has a wound on a pad or a paw. Another handler is available to assist with positioning and restraint.

Standard: Provided first aid to a canine with a pad or paw injury without causing further contamination of the wound or further harm to the canine.

Performance Steps

1. Canines are very active on their feet, making their pads and paws susceptible to injury. Because their pads and paws are in contact with the ground, these areas are susceptible to all kinds of contaminants, especially if there is a wound.
2. Provide first aid to a bleeding wound.
 - A. For severely bleeding wounds, provide immediate medical care. See Task 5.
 - B. For mildly bleeding wounds, cover the wound with a stack of 4 x 4 inch gauze sponges and apply firm pressure to the wound with the bandage between the wound and your fingers.
3. Clean the wound.
 - A. Flush with 250 mL of sterile fluid.
 - B. Dry the foot very well before bandaging.
4. Apply a bandage to the paw.
 - A. Direct the canine handler to position and restrain the canine so that the area to be bandaged is accessible.
 - B. Apply the first primary or contact layer by placing a non-adherent pad directly on top of the wound.
 - C. Apply the second, secondary, or intermediate layer. Apply rolled gauze, starting at the end of the paw and working

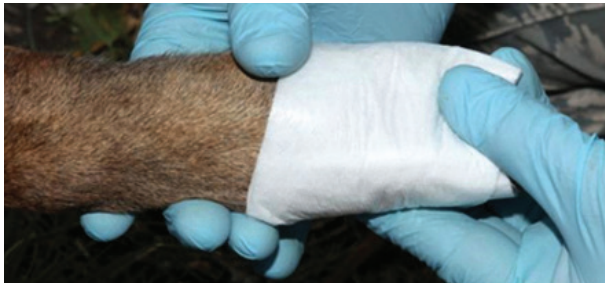
your way up the leg. Use firm pressure when wrapping and keep the gauze smooth and without wrinkles. Overlap the previous roll by 1/2 the width of the tape each time, and wrap all the way up to include the accessory pad.

NOTE: DO NOT pull the gauze roll tight as you are applying it. Unless the middle two toes are injured, the bandage is applied such that these two toes can be seen to check for swelling. The toenails should be almost touching and parallel, but loose enough to allow the handler to insert one finger between them. If the toes are spreading apart and cold to the touch, this indicates that the foot is swelling and the bandage should be changed or removed immediately.

- D. Apply the third, tertiary, or outer layer. Wrap with self-adherent conforming bandage over the cast padding without tension, followed by tape without tension. Wrap the tape around the paw/leg, ensuring that it is covering the top edge of the bandage and the canine's hair. Wrapping the tape too tightly will cause the paw to swell!
5. Monitor the canine.
 - A. Ensure that the bandage stays clean and dry.
 - B. **DO NOT** let the canine chew or lick the bandage.
 - C. **DO NOT** let the bandage become wet. Consider placing a plastic bag or wrap over the bandage if the canine has to walk in a wet environment.

- D. Note if the canine's pain and/or discomfort level rises. If the bandage is too tight, it may interfere with circulation to the point of requiring an amputation.
 - E. Check to see that the bandage has not slipped out of place.
 - F. Sudden chewing at a bandage that has been previously well tolerated is a sign of a problem.
6. Report, record, and evacuate.
- A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Provided first aid to stop bleeding, if present.		
2. Cleaned the wound.		
3. Applied a bandage to the paw.		
4. Reported, recorded, and activated aeromedical services.		



1. Apply a non-adherent pad directly on top of the wound.



2. Apply gauze starting at the end of the paw and work your way up the leg.



3. Apply the third, tertiary or outer layer. Wrap with self-adherent conforming bandage over the cast padding without tension.



4. Completed wrap

Photos courtesy of DoD.

WD Handler Medical Care, Task 19

Allergic Reaction to Insect Bite or Sting

Action: Provide first aid for a canine with an allergic reaction.

Conditions: A canine has clinical signs suggesting an allergic reaction.

Standard: Provided first aid for a canine with an allergic reaction.

Performance Steps

- I. Identify the source of the allergic reaction, such as arthropods or insects in your area that could cause potential harm to your canine.
 - A. Check with local resources to find out information about insects in your area.
 - B. The following are reliable resources.
 - a. Kennel Master.
 - b. Canine's Primary Provider.
 - c. Medical Threat Information Briefing.
 - d. Supporting veterinary personnel.
2. Recognize the signs of an allergic reaction.
 - A. Mild signs may include any of the following:
 - a. Pain or intense itching at the wound site. The canine may lick or bite the area; if the affected area is a paw or leg, the canine may hold it up or refuse to put weight on it.
 - b. Drops of blood or oozing at the affected site.
 - c. Swelling.
 - d. Sudden onset of signs, typically after working outdoor environments.
 - e. Physical evidence of a spider, bee, or wasp.
 - B. Severe signs may include any of the following:
 - a. Itchy, red, moist, or scabbed skin.
 - b. Increased scratching.
 - c. Itchy, runny eyes.
 - d. Itchy back or base of tail (most commonly flea allergy)
 - e. Itchy ears and ear infections.
 - f. Sneezing.
 - g. Vomiting.
 - h. Diarrhea.
 - C. Not all insect bites or stings will cause an allergic reaction. Your canine may not suffer an allergic reaction to a bite or sting, but still require immediate treatment for allergy by veterinary staff.
 - D. The severity of symptoms your canine displays are based on the location of the bite or sting, and the size of the canine.
 - E. Typically, an allergic reaction is immediate, occurring within 5 minutes of envenomation. If there are no visible signs of a reaction after an hour, then it is unlikely that an allergic response occurred. Nevertheless, close observation is necessary for at least 12 hours, because some reactions are delayed.

- F. You may or may not witness your canine being bitten or stung. It is safer to assume allergic reaction has occurred if clinical signs are present that suggest a bite or sting, and treat the canine as described in this manual.
3. Provide first aid for an allergic reaction to insect or arthropod bite or sting.
 - A. Administer drugs to reduce the allergic reaction:
 - a. Give one milligram per kilogram (1mg/kg) dose of diphenhydramine (such as Benadryl) by mouth (PO).
 - B. Keep the canine calm and quiet; cease operations with the canine. If possible keep the affected area lower than the heart.
 - C. If an open wound is present or develops, protect the wound with a bandage.
 - D. The following actions can make the allergic reaction worse:
 - a. **DO NOT:** Apply ice to the bite or sting area.
 - b. **DO NOT:** Exercise or have the canine move around. Movement causes the venom to spread more quickly.
 - c. **DO NOT:** Apply a windless tourniquet above the site if the bite or sting was to an extremity.
 - d. **DO NOT:** Cut the area to squeeze or



Swollen tissue at location of bite or sting.

Photo courtesy of DoD

suction out the poison.

NOTE: Specific treatments are going to vary with the type of spider or insect involved.

NOTE: For true anaphylactic reactions (collapse, increased heart rate, weak or absent pulses), initiate treatment for shock.

4. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request for any canine with witnessed or suspected insect or arthropod, bite or sting.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Identified insects and arthropods in the area.		
2. Recognized signs of an allergic reaction to insect or arthropod bite or sting.		
3. Provided first aid for an allergic reaction.		
4. Reported, recorded, and initiated activated aeromedical services.		

WD Handler Medical Care, Task 20

Allergic Reaction to Arthropod or Reptile Envenomation

Action: Provide first aid for a canine with a reaction to poisonous spider, lizard, or snake envenomation.

Conditions: A canine has clinical signs suggesting a reaction to spider, lizard, or snake envenomation.

Standard: Provided first aid for a canine with an allergic reaction to spider, lizard, or snake envenomation.

Performance Steps

1. Identify the venomous spiders, lizards, and snakes in your area that could cause potential harm to your canine.
 - A. Check with local resources to find out information about venomous spiders, lizards, and snakes in your area.
 - B. The following are reliable resources.
 - a. Kennel Master.
 - b. Canine's Primary Provider.
 - c. Medical Threat Information Briefing.
 - d. Supporting veterinary personnel.
2. Recognize the signs of envenomation by an arthropod, or reptile.
 - A. Mild signs may include any of the following:
 - a. Pain at the wound site. The canine may lick or bite the area; if the wound is to a paw or leg, the canine may hold it up and refuse to put any weight on it.
 - b. Fang marks, bite marks, or puncture wounds.
 - c. Drops of blood or oozing blood at the wound site.
 - d. Swelling.
 - e. Bruising of the skin at the bite site.
 - f. Sudden onset, typically after working outdoor environments.
 - g. Physical evidence of a poisonous spider, snake, or lizard.
 - B. Severe signs may include any of the following:
 - a. Weakness, lethargy, disorientation.
 - b. Muscle tremors.
 - c. Slow, labored breathing.
 - d. Vomiting.
 - e. Diarrhea.
 - f. Tissue necrosis (cellular death) with open, draining wounds at bite site.
 - g. Collapse or unconsciousness.
 - h. Shock, including pale or blue mucous membranes, weak or absent arterial pulse, prolonged capillary refill time (CRT), collapse, increased heart rate.
 - i. Death.
 - C. Not all bites or stings will cause a severe reaction. The canine may not react to a bite, but still may require immediate treatment for envenomation by veterinary staff.



*Drops of blood at the wound site.
Photo courtesy of DoD*

- D. The severity of symptoms your canine displays are based on the amount and type of venom injected through the bite, the location of the bite, and the size of the canine.
 - E. Typically, a reaction is immediate, occurring within 5 minutes of envenomation. If there are no visible signs of a reaction after an hour, then it is unlikely that an allergic response occurred. Nevertheless, close observation is necessary for at least 12 hours, because some reactions are delayed.
 - F. You may not witness your canine being bitten. It is safer to assume envenomation has occurred if clinical signs suggest a poisonous bite and treat the canine as described in this manual.
3. Provide first aid for an allergic reaction to envenomation.
- A. Administer drugs to reduce an allergic reaction:
 - a. Give one milligram per kilogram (1 mg/kg) dose of diphenhydramine (Benadryl) by mouth.
 - B. Keep the canine calm and quiet; cease operations with the canine. If possible, keep the affected area lower than the heart.
 - C. If an open wound is present or develops, protect the wound with a bandage.
 - D. **The following actions can make the allergic reaction worse:**
 - a. **DO NOT:** Apply ice to the bite area.
 - b. **DO NOT:** Exercise or have the canine move around. Movement causes the venom to spread more quickly.
 - c. **DO NOT:** Apply a windless tourniquet above the site if the bite was to an extremity.

d. **DO NOT:** Cut the area to squeeze or suction out the poison.

Note: Anti-venom is the only definitive treatment for snakebite. Anti-venom is only available from your supporting veterinary personnel. Specific treatments are going to vary with the type of snake, spider, or lizard involved.

Note: For true anaphylactic reactions (collapse, increased heart rate, weak or absent pulses), initiate treatment for shock.

- 4. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request for any canine with witnessed or suspected envenomation.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Identified venomous spiders, lizards, shrews, or snakes in the area.		
2. Recognized signs of envenomation.		
3. Provided first aid for envenomation.		
4. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 2 I

Vomiting and/or Diarrhea

Action: Provide first aid to a canine with vomiting and/or diarrhea.

Condition: A canine is vomiting and/or has diarrhea.

Standard: Provided first aid to a canine for vomiting by withholding food for 24 hours and water for 12 hours.

Performance Steps

1. Know common causes of vomiting.
 - A. Digestive system problems (diet change, diet intolerance, intestinal parasites, bacterial diseases, organ failure).
 - B. Irritation or pain in the gastrointestinal tract.
 - C. Drugs.
 - D. Toxic waste products (liver or kidney failure).
 - E. Chemicals.
 - F. Inner ear problems or motion sickness.
 - G. Stress.
2. Know causes of diarrhea.
 - A. Irritation of the lining of the intestinal tract.
 - B. Intestinal infection.
 - C. Altered bacterial population in the intestinal tract.
 - D. Breakdown of the lining of the intestinal tract.
 - E. Sudden change in diet.
 - F. Stress.
3. Recognize signs of vomiting and diarrhea.
 - A. Vomiting and diarrhea are usually obvious and visible.
 - B. If the animal does not vomit or have an episode of diarrhea while with you, you may find evidence of it in the kennel.
 - C. Diarrhea technically means increased water content in the feces. Diarrhea can vary from softer-than-normal feces to watery feces. Diarrhea with excessive mucus (greasy appearance) or blood are especially concerning and require a more aggressive response.
4. Recognize signs that require immediate first aid or attention from a veterinarian. These signs include:
 - A. Presence of fresh blood or blood clots in the feces or vomit.
 - B. Protracted or persistent vomiting and diarrhea.
 - C. Black, tarry feces.
 - D. Difficult or painful defecation. The canine will cry out in pain or stay hunched up trying to defecate for long periods of time.
 - E. An abnormally swollen abdomen. This may indicate gastric dilatation, gastric dilatation-volvulus, or some other abdominal disease or problem.
 - F. Pain or depression in addition to vomiting or diarrhea.
 - G. Increased body temperature.
 - H. Severe dehydration. The following are some common signs of profound dehydration.

- a. Increased heart rate.
 - b. Weak and/or rapid pulse.
 - c. Dry or tacky mucous membranes.
 - d. Capillary refill time is longer than 2 seconds.
 - e. Prolonged skin turgor (>2 seconds).
5. Provide first aid for vomiting or diarrhea.
- A. Vomiting.
- a. Take vital signs and perform a physical examination of the canine.
 - b. Withhold all food for 24 hours after the last episode of vomiting.
 - c. Withhold **FREE CHOICE** or access to large volumes of fluids/water for 12 hours after the last episode of vomiting. Instead, only allow canine to lick/chew ice chips or allow the canine to lap or have the handler syringe feed small volumes of water or low-sugar electrolyte solution (e.g., Pedialyte®) every 30 minutes.
 - d. If no vomiting, fluid amounts may be slowly increased after 12 hours.
 - e. After 24 hours, introduce small amounts of food several times a day over 2 to 3 days.
 - f. Resume normal diet and feeding schedule 2 to 3 days later, if vomiting has ceased.
 - g. Notify supporting veterinary personnel if vomiting persists or there are any abnormalities on the physical exam.
- B. Diarrhea.
- a. Take vital signs and perform a physical examination of the canine.
 - b. Withhold all food for 24 hours after last episode of diarrhea.
 - c. After 24 hours, introduce small amounts of food several times a day over 2 to 3 days.
 - d. Resume normal diet and feeding schedule 2 to 3 days later.
 - e. Allow the canine to drink normally (**DO NOT** withhold water).
 - f. Notify supporting veterinary personnel if diarrhea persists or there are any abnormalities on the physical exam.
6. Monitor the canine for signs of continued vomiting and diarrhea.
7. Report, record, and evacuate.
- A. Inform the Kennel Master of the situation, and contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.
 - C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Know common causes of vomiting.		
2. Know common causes of diarrhea.		
3. Recognized signs of vomiting and diarrhea.		
4. Recognized signs that require immediate first aid or veterinary attention.		
5. Provided first aid for vomiting and diarrhea.		
6. Monitored the canine for continued signs of vomiting or diarrhea.		
7. Reported, recorded, and initiated activated aeromedical services.		

WD Handler Medical Care, Task 22

Dehydration

Action: Provide first aid to a canine with dehydration.

Conditions: A canine is depressed or lethargic, has tacky gums, loss of skin elasticity, and a dry nose. The canine's eyes are slightly sunken and they have an increased CRT and a weak arterial pulse.

Standard: Provided first aid for dehydration in a canine.

Performance Steps

1. Understand the definition of dehydration and common causes in canines.
 - A. Dehydration is the excessive loss of fluid and electrolytes from the body through illness or physical exertion. Electrolytes (e.g., sodium, chloride, potassium) are salts needed by cells to control movement of water in the body and many body functions.
 - B. Causes of dehydration:
 - a. Inadequate water intake.
 - b. Excessive loss of water and electrolytes due to illness (fever, vomiting, diarrhea) or environmental causes (high heat, high humidity, cold temperatures).
2. Determine that the canine is dehydrated by observing signs of dehydration.
 - A. Signs of early dehydration are very hard to recognize.
 - a. Reduced physical activity.
 - b. Abnormal mentation or level of consciousness (depressed, lethargic).
 - c. Tacky mucous membranes (gums).
 - B. Signs of moderate dehydration:
 - a. Dry and tacky mucous membranes (nose, mouth, gums).
 - b. Loss of skin elasticity/increased skin turgor.
 - c. Slightly sunken eyes.
 - d. Slightly increased CRT.
 - C. Signs of severe dehydration:
 - a. Pale mucous membranes.
 - b. Prolonged CRT.
 - c. Weight loss (5 percent or more) at the time of the assessment.
 - d. Sunken eyes.
 - e. Weak arterial pulse.
3. Provide first aid for dehydration.
 - A. If your canine is showing early signs of dehydration, offer fresh water.
 - a. Unfortunately, if your canine is already dehydrated, sick, injured or cold, he/she may not want to drink.
 - b. If the canine does show an interest in drinking water, make sure he/she doesn't drink more than a few sips every few minutes. Over-drinking or drinking quickly could lead to vomiting, dehydrating the canine further.
 - c. If the environment is hot, humid, or sunny, move the canine to shade or indoors if air conditioned.
 - d. Allow the canine to rest.
4. For all canines with dehydration, monitor for shock and provide appropriate first aid if signs of shock develop.
5. Report, record, and evacuate.
 - A. Contact supporting veterinary staff to request further instructions.
 - B. Initiate an aeromedical evacuation request.

C. Keep a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Understands definition and causes of dehydration.		
2. Determined the canine was dehydrated by observing the signs.		
3. Provided first aid for dehydration.		
4. Monitored for shock.		
5. Reported, recorded, and activated aeromedical services.		
6. Made a written record of events and treatment.		

WD Handler Medical Care, Task 23

Toxic Ingestion Exposure

Action: Provide first aid to canine that has ingested common food, training aid, or medicine that is potentially toxic or poison.

Condition: A canine has ingested common food, training aid, or medicine and is displaying signs and symptoms relating to toxic ingestion exposure.

Standards: Induce vomiting and provide immediate medical care to a canine based on poison control recommendations and transport to primary veterinarian.

Performance Steps

1. Most training aids are toxins that can cause severe medical problems if ingested by a canine. While uncommon, ingestion of a training aid warrants immediate action by the handler to prevent absorption of the toxic compound or drug.
 - Onions.
 - Zinc.
 - Ethylene glycol.
 - Garlic.
 - Macadamia nuts.
 - Mushrooms.
 - Xylitol (artificial sweetener in sugarless gum).
 - Avocado.
 - Yeast.
 - Rat bait.
 - Acetaminophen (Tylenol).
 - Aspirin.
 - Ibuprofen.
2. Anything can potentially be a toxin in excess, but certain materials are more toxic than others. Certain foods and medications are harmless to most people, but may be harmful to dogs. Consult with a veterinarian or knowledgeable veterinary professional before giving your dog any new food or medication.
3. Veterinary Toxicologist Helpline numbers:
 - A. **Pet Poison Helpline (855) 764-7661.**
 - B. **ASPCA Animal Poison Control (888) 426-4435.**
4. These are some of the most common foods, medications, and materials that can be toxic to dogs. This list certainly does not include all substances toxic to dogs; talk with your veterinarian for a more comprehensive overview.
 - Grapes and raisins.
 - Chocolate (theobromine).
 - Coffee and tea (caffeine).
5. Recognize clinical signs.
 - Vomiting (+/- blood).
 - Diarrhea.
 - Hyper-excitability.
 - Weakness.
 - Incoordination (ataxia).
 - Depression.
 - Lethargy.
 - Pale, cyanotic, or yellowed mucous membranes.
 - Irregular heartbeat.
 - Acute respiratory distress.

- Abdominal pain.
 - Fever.
 - Tremors.
 - Seizures.
 - Coma.
 - Yellowing of the whites of the eyes.
 - Swollen face and paws.
 - Excessive urination.
6. The general approach to treating a canine who has ingested a common food or medicine with potentially toxic or poisonous effects is to follow the poison control advice and recommendations.
7. Indications and contra-indications for inducing vomiting.
- A. An emetic is a drug that causes or induces vomiting. Emetics are an important aspect in the treatment of orally ingested toxins. Used properly, emetics can remove the majority of ingested material from the stomach. Used improperly, emetics can increase injury and worsen outcome.
- B. Determine if inducing vomiting is appropriate for your canine.
- a. Reasons **TO** induce vomiting:
- i. Ingestion of a toxic substance within the last 4 hours.
 - ii. Ingestion of a substance that is not corrosive or petroleum-based.
- b. Reasons **NOT** to induce vomiting:
- i. Ingestion of a toxic substance more than 4 hours ago.
 - ii. Abnormal level of consciousness or unconsciousness.
 - iii. Inability to swallow.
 - iv. Ingestion of a corrosive or petroleum-based product, such as gasoline, oil, tar, grease, paint, solvents, paint strippers or thinners, or batteries.
 - v. Ingestion of sharp objects, such as bones, pieces of hard plastic, glass.
- c. Induce vomiting, **IF INDICATED**.
8. Take action after vomiting has started to prevent excessive vomiting and monitor the canine.
- A. 10-50 ml (1-10 teaspoons) of 3 percent hydrogen peroxide given orally can induce vomiting in canines. Peroxide should be administered cautiously because aspiration of hydrogen peroxide foam causes severe aspiration pneumonia.
- B. Excessive vomiting is dangerous to the canine.
- C. Once the canine has vomited, **DO NOT** let the canine re-ingest the vomitus. If possible, save the vomitus for veterinary personnel to examine. **DO NOT** let the canine eat anything (food, treats) for 12 hours after induction of vomiting. Allow water in small amounts frequently, beginning 6 hours after the induction of vomiting.
- D. Monitor the canine for any adverse effects from the hydrogen peroxide ingestion. Adverse effects include:
- a. Prolonged vomiting.
 - b. Significant coughing or difficulty breathing.
9. Report, record, and evacuate.
- A. Contact supporting veterinary personnel to request further instructions.
- B. Initiate an aeromedical evacuation request.
- C. Make a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Recognized cause for toxic ingestion and call poison control for advice.		
2. Recognized signs that require immediate first aid or veterinary attention.		
3. Knows indications and contraindications for inducing vomiting.		
4. Induced vomiting with hydrogen peroxide, if indicated.		
5. Took action after vomiting has started to minimize excessive vomiting.		
6. Monitored the Canine for continued signs of vomiting or diarrhea.		
7. Reported, recorded, and activated aeromedical services.		
8. Made a written record of events and treatment.		

WD Handler Medical Care, Task 24

Opioid/Fentanyl Occupational Exposure

Action: Provide Naloxone opioid reversal medication in a life-saving act for opioid or fentanyl exposure.

Condition: A canine has been exposed to an opioid such as heroin, fentanyl, and other opiates. Unless you are aware of obvious exposure, you must first recognize the signs and provide the opioid antidote naloxone per standing order from primary veterinarian.

Standards: Identified exposure or recognized the signs of and provided the opioid antidote naloxone and/or initiated an emergency medical evacuation for life-saving action for a canine.

Performance Steps

1. Opioid overdose in the canines during narcotic investigations may be apparent with obvious white powdered substance on muzzle or paws. Synthetic opioids are a particular concern because of their potency and potential to be inhaled or absorbed through the skin. Fentanyl is a rapid-acting synthetic opioid that is 50 to 100 times more potent than morphine and can be hundreds of times stronger than heroin. A handler must begin prompt observations if obvious exposure or opioid signs develop during and after narcotic investigations occur which opioids are discovered.
2. Recognize signs of opioid exposure.
 - A. During a narcotic investigation and after the canine has obvious white powdery substance on muzzle and or paws, the canine exhibits:
 - B. Drowsiness.
 - C. Staggered gait.
 - D. Slow heart rate.
 - E. Breathing slowly.
 - F. Pinpoint pupils.
3. Per standing order from the canine's primary veterinarian, provide naloxone according to the route and dosage for the canine's size.
 - A. Be in route to veterinarian for emergency stabilization.
 - B. Monitor heart rate; 70-120 beats per minute.
 - C. Monitor respiration; 10-35 breaths per minute.
 - D. Per standing order from primary veterinarian, if heart rate or respiration falls below rates, repeat naloxone as prescribed in standing order.
4. In the event the canine has collapsed, begin resuscitation and refer to BCLS described in this manual. The use of naloxone in canines is for emergency use only until the canine is under the care of a veterinarian. The Canine Naloxone Program is recommended for veterinarian-client-patient relationship (VCPR) with the primary veterinarian.

Performance Measures	GO	NO GO
1. Maintained valid VCPR with the primary veterinarian.		
2. Identified opioid exposure by muzzle or skin contact with opioid.		
3. Recognized signs of opioid exposure.		
4. Recognized signs that require immediate first aid or veterinary attention.		
5. Provided naloxone for opioid exposure.		
6. Monitored the canine for continued signs of opioid exposure.		
7. Made a written record of events and treatment.		

WD Handler Medical Care, Task 25

Chemical, Biological, Nuclear, Radiological, or Explosive (CBRNE) Exposure

Action: Perform chemical, biological, nuclear, radiological, or explosive decontamination of a canine.

Conditions: A canine has been exposed to a CBRNE agent. The agent involved has been identified and the canine must be decontaminated.

Standard: Decontaminated a canine who was contaminated with a CBRNE agent.

Performance Steps

1. The steps outlined in this task are generic in nature and based on current available doctrine. Modifications to these steps may be necessary based on numerous factors.
2. Always protect and treat yourself **FIRST!**
3. Canines are not currently issued protective equipment. Handlers must rely on field-expedient protective measures:
 - A. Avoid contaminated food and water. **DO NOT** allow canines to drink from puddles, water holes, trenches, or other sources of free-standing water.
 - B. Avoid contaminated terrain.
 - C. Seek shelter if available.
 - D. Cover with ponchos and “booties.” Booties can be made out of bags, plastic bags, or exam gloves.
 - E. If possible, keep the canine from licking any part of its body while in a potentially contaminated area.
 - F. Decontaminate the canine as safely and as quickly as possible.
 - G. Decontaminate any item the canine will come in contact with as soon as possible (after self and canine decontamination), including collars, leashes, kennels, food, and water bowls, etc.
4. Decontaminate from nuclear fallout.
 - A. Remove visible particles from the hair and skin by brushing.
 - B. Bathe the canine with soap and water.
5. Decontaminate for biological agents.
 - A. Wash the canine with soap and water.
 - B. Follow policies for specific agents.
6. Decontaminate for irritant agents (riot control agents). Examples include tear gas and pepper spray.
 - A. These agents have little effect on canines, but may cause increased respirations, hyperactivity, and excessive tearing and nasal secretions.
 - B. Flush the eyes with generous amounts of water, if liquid or solid agents come in contact with the eyes.
7. Decontaminate for nerve agent exposure, including organophosphate and carbamate insecticide toxicity.
 - A. Recognize the signs of nerve agent, organophosphate, and carbamate toxicity. Common signs are easily remembered using the mnemonic **SLUDGE**.
 - a. Excessive **Salivation** and drooling.
 - b. Uncontrolled **Lacrimation** (tearing).
 - c. Uncontrolled **Urination**.
 - d. Uncontrolled **Defecation or Diarrhea**.

- e. **Gastroenteritis.**
 - f. **Emesis** (vomiting).
 - g. Rapid breathing, panting, or severe respiratory distress.
 - h. Muscle twitching. Muscle twitching usually begins with the face, progresses over the entire body, and becomes much more severe. Attempted walking becomes stiff and jerky.
 - i. Convulsions, seizures, or collapse.
 - j. Odor of pesticides on the hair.
- B. Decontaminate the skin and hair immediately following nerve agent contamination to slow penetration of liquid agents through the skin.
- a. Decontaminate the skin and hair using the skin decontamination kit first. Wipe down the entire canine avoiding the area around the eyes. Follow with soap and water bath.
 - i. If a kit is not available, give the canine a bath with soap and water.
 - ii. If soap is not available, rinse the canine with copious amounts of water.
 - iii. **DO NOT** use parts of the kit in or around the eyes.
 - b. Decontaminate the eyes by rinsing with generous amounts of water or IV fluid until the agent has been removed.
 - c. Decontaminate collars, leashes, muzzles, cages, bowls, and other items using decontamination kits.
8. Decontaminate for white phosphorus.
- A. Immediately cover the affected area by submerging in water or with water-soaked bandaging material.
 - B. As quickly as possible, bathe the affected part in a baking soda (bicarbonate) solution to neutralize the phosphoric acid.
 - C. Remove remaining white phosphorous fragments (visible in dark surroundings as luminescent spots).
 - D. Treat the animal for thermal burns once all phosphorus has been removed.
9. Decontaminate for blood agent exposure.
- A. Blood agents include cyanide and cyanide-like toxins.
 - B. Blood agents produce pulmonary edema (fluid buildup in the lungs).
 - C. Decontaminate skin using the skin decontamination kit.
10. Decontaminate for blister agent exposure.
- A. Blister agents include mustard, nitrogen mustard, and arsenical blister agents.
 - B. A canine's coat usually protects him/her from blistering agents, but blister agents do cause harm if they come in contact with any exposed skin.
 - C. Clinical signs of blister agent contamination include:
 - a. Hair that appears to "stand up" within an hour of exposure and may last more than an hour.
 - b. Redness and swelling develop at the area of exposure 2-3 hours later.
 - D. Decontaminate as soon as possible after exposure. If redness and swelling have not appeared, use the skin decontamination kit and wash the canine with soap and water.
 - E. Decontaminate collars, muzzles, and leashes using a kit.
11. Decontaminate for incapacitating agent exposure.
- A. Decontaminate the hair and skin with warm soapy water.
 - B. Restrict activity.
 - C. Keep uncontaminated drinking water available.

12. Dispose of wastes according to local procedures.
13. Report, record, and evacuate.
 - A. Contact supporting veterinary personnel to request further instructions.
 - B. Initiate an aeromedical evacuation request for any canine treated for CBRNE exposure.
 - C. Make a written record of the treatment when the tactical situation permits. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Understands CBRNE protection and decontamination guidelines.		
2. Took steps to protect canine from CBRNE contamination.		
3. Decontaminated from nuclear fallout.		
4. Decontaminated for a biological agent.		
5. Decontaminated for irritant agents.		
6. Decontaminated for nerve agent exposure.		
7. Decontaminated for white phosphorus exposure.		
8. Decontaminated for blood agent exposure.		
9. Decontaminated for blister agent exposure.		
10. Decontaminated for incapacitating agent exposure.		
11. Disposed of decontamination materials following local procedures.		
12. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 26

Head, Neck, or Trunk Injury

Action: Apply a bandage to the head, neck, or trunk of a canine.

Conditions: A canine has to be transported to a veterinary facility because of a head, neck, abdominal, or trunk injury. First aid for the wound has been completed. Another handler is available to assist with positioning and restraint.

Standard: Applied a bandage to the head, neck or trunk of a canine without causing further harm to the canine.

Performance Steps

1. As a canine handler, you may have to provide first aid for an injury to the head, neck, or trunk of your canine. Prior to evacuating your canine for further care, you will need to protect any wounds by applying a bandage. Bandaging incorrectly can cause further injury to your canine, so it is imperative to learn the proper technique for bandage application.
2. Advantages and disadvantages of bandaging.
 - A. Advantages:
 - a. Speeds wound healing.
 - b. Provides wound cleanliness.
 - c. Controls bleeding.
 - d. Reduces swelling and bruising.
 - e. Eliminates dead space.
 - f. Immobilizes injured tissue (splinting).
 - g. Minimizes scar tissue.
 - h. Makes patient more comfortable.
 - B. Disadvantages:
 - a. If improperly bandaged, can cause further injury.
 - b. May cause patient discomfort.
 - c. Patient mutilation of bandage and wound.
 - d. Bacterial colonization of wound.
 - e. Ischemic injury (cut off circulation).
 - f. Damage to healing tissues.
3. General technique for applying a bandage to the head, neck, or trunk.
 - A. Direct the handler to position and restrain the canine so that the area to be bandaged is accessible.
 - B. Apply the first layer.
 - a. The first layer, also called primary layer or contact layer, is in direct contact with the wound.
 - b. Cover the wound with non-adherent pad, which does not stick or adhere to the wound.
 - C. Apply the second layer.
 - a. Sometimes the secondary layer is called the “intermediate” layer.
 - b. This layer will absorb fluid that comes from the wound.
 - c. Wrap cast padding and the gauze bandage around the affected area. Use firm, even pressure when wrapping.
 - D. Apply the third layer.
 - a. Also called tertiary or outer layer.
 - b. Wrap elastic wrap/tape or non-stretch gauze over the secondary layer without tension.

4. Specific techniques for bandaging the head and neck.
 - A. **DO NOT** restrict breathing, swallowing, eating, or sight (unless covering eye injury).
 - B. Ears may be left uncovered if not wounded. If the ear is covered, mark the outline of the ear pinna or write “pinna up” or “pinna down” on the bandage. This prevents anyone who removes the bandage from accidentally cutting the canine’s ear.
 - C. Check bandage tightness by inserting two fingers beneath each end of the bandage. Fingers should fit snugly. If the bandage is too tight, re-bandage with less tension.
 - D. Observe for difficulty swallowing, choking, or discomfort. If observed, re-bandage with less tension.
 - E. Use a plastic bucket with the bottom cut out tied to the canine’s collar to prevent self-mutilation of the bandage or wound.
 - F. Bandaging the thorax (upper chest):
 - a. The bandage must be wrapped in front of at least one of the front legs to prevent the bandage from slipping rearward.
 - b. Check tightness by sticking two fingers under each end and observe for difficulty breathing or discomfort. If observed, re-bandage with less tension.
 - G. Bandaging the abdomen:
 - a. The bandaging must be wrapped in such a manner that the prepuce is exposed for a male dog to urinate without doing so on the bandage.
 - b. Check tightness by sticking two fingers under each end and observe for difficulty in breathing or discomfort. If observed, re-bandage with less tension.
 - c. To prevent the bandage from slipping rearward, tape may need to be applied at the junction of the hair line and bandage material along the leading edge of the bandage.
5. Report, record, and evacuate.
 - A. Contact supporting veterinary personnel to request further instructions.
 - B. Initiate an aeromedical evacuation for any canine with severe wounds.
 - C. Make a written record of the treatment. Include the date and time, actions taken, observations, and outcome.

Performance Measures	GO	NO GO
1. Understands the advantages and disadvantages of bandaging.		
2. Applied a bandage to the head, neck, or trunk.		
3. Demonstrated specific techniques for bandaging the head and neck.		
4. Reported, recorded, and activated aeromedical services.		

WD Handler Medical Care, Task 27

Animal Bite Prevention, Local Animal Control, and Rabies Awareness

Action: Understand control of feral animals, rabies virus infection risk, and actions necessary to reduce the risk of feral animal contact and rabies virus transmission to you and your canine.

Conditions: A handler and a canine are operating in or assigned to an area with feral or stray animals. The handler must be educated as to the current animal control measures, rabies virus infection risk, SOPs, and recommendations to reduce risk of animal contact and infectious disease transmission.

Standard: Coordinated with appropriate personnel to obtain current information.

Performance Steps

1. Understand the importance of animal bite prevention, local animal control, and rabies awareness.
 - A. Human exposure to rabies from domestic animals in the United States is rare.
 - B. Rabies is transmitted through contact of wounds or mucus membranes with neural tissues or saliva of infected or rabid mammals.

NOTE: Avoid contact with stray dogs, foxes, bats, cats, monkeys, mongooses, and jackals. Animals infected with rabies can either appear aggressive or docile.
 - C. If you are bitten by an animal, wash any wounds with soap and water immediately. Seek medical care.
2. Familiarize yourself with applicable orders, regulations, and policies related to local animal control, animal bite prevention, and rabies awareness.
 - A. All canine handlers should receive the current rabies awareness training, and all primary care medical providers should review the current rabies provider training.
 - B. Promptly report all animal bites or exposure to suspect animals to supporting medical units and follow post-exposure medical protocols.
3. Initiate appropriate actions in the event of an animal bite or possible exposure to rabies.
 - A. Immediately wash out the wound with soap and water for at least 15 minutes.
 - B. Seek medical treatment for any animal encounter that results in injury (bites, scratches, and abrasions) or contact with animal saliva to ensure appropriate evaluation for rabies exposure. Go to the nearest medical treatment facility – describe **ALL** circumstances of the exposure.
 - C. If you have already been immunized against rabies, you will get booster shots of rabies vaccine and standard medical treatment for the bite or scratch wound itself. If you have not been immunized, you will get human rabies immunoglobulin and up to five separate injections of rabies vaccine, based on the most current medical guidelines.

NOTE: When performed properly and on time, post-exposure prophylaxis is 100 percent EFFECTIVE.
 - D. Provide local animal control personnel information to assist in capturing the animal after a potential exposure. Taking a photo of the dog or other animal may help animal control identify and capture it. The medical provider will notify the nearest veterinary facility for quarantine or testing the animal.

- E. Booster doses of rabies vaccine are given every 2 years or when antibody concentrations indicate. Consult your veterinary facility for current, detailed information.

Performance Measures	GO	NO GO
1. Understands the risks of rabies virus exposure.		
2. Recognizes the importance of reporting all animal contact.		

Section 5. WD IFAK and Medical Care First Aid Kit

The handler first aid set is organized by compartments, which allows it to be customized to support different mission requirements. Handlers can individualize their kits to carry only what they need for expected mission needs and duration, rather than a single, bulky and heavy bag with unnecessary supplies.

The Canine Individual First Aid Kit (IFAK) and the Medical Care-First Aid Kit combined contain the supplies to provide all of the canine care tasks included in the manual.

Handlers must review the capabilities (and inherent limitations) supported by each first aid kit element and determine what they need for their mission.

A Canine IFAK is designed to carry this “bare minimum” of medical supplies to provide immediate pneumothorax management and immediate control of severe bleeding. The IFAK should be carried at all times in the operational environment to meet immediate needs under the CUF/DTC phase of TCCC/TECC.

The Medical Care-First Aid Bag contains the remainder of the medical supplies required for comprehensive emergency care and preventive medical care. This bag should be readily available (i.e., stored in the canine transport vehicle or a K-9 Duty Station). The Medical Care-First Aid Bag meets the needs for expanded care in the TFC/ITC phases of TCCC/TECC and base preventive medicine.

IFAK for the Canine

- Adhesive tape, surgical, 3 inch width, 1 roll
- Bandage set, elastic (Trauma Wound Dressing/ Hemorrhage Control Bandage), 6 inch width, 1 each
- Bandage, gauze, hemostatic impregnated, 3 inches x 4 yards, 2 packs
- Dressing, occlusive, adhesive, (Chest Seal), 2 per package, 1 package
- Gloves, patient examining and treatment, 2 pair
- Shears, trauma, 7 inch length, 1 pair
- Dressing, first aid, field, 11.5 inches X 11.5 inches, absorbable, 1 each
- Non-windless tourniquet, 1 each



Photo courtesy of DHS

Medical Care – First Aid Kit

Basic supplies:

- Adhesive tape, medical, 1 inch width, 2 rolls
- Blanket, survival, two-person size, 1 each
- Gloves, patient examining and treatment, 4 pair
- Lubricant, surgical, 5 gram packets, 5 packets
- Pad, non-adherent, 3 inches X 8 inches, 4 pads
- Powder, styptic, veterinary, 1 bottle
- Resuscitator, hand-operated, 1 each
- Splint, universal, 36 inches X 4¼ inches, 1 each
- Thermometer, digital, veterinary, 1 each
- Litter, canine, 1 each
- Trimmer, animal toenail, 1 each
- Diphenhydramine hydrochloride pills
- Ointment, antibiotic, canine, 1 tube
- Otic cleansing solution 20 mL, 1 bottle
- Hydrogen peroxide 3% solution, 1 bottle
- Bandage, elastic, self-adherent, 4 inch width, 2 rolls
- Bandage, gauze, 3 inch width, 2 rolls
- Dressing, hemostatic (Trauma Pad), 12 inches X 12 inches, 2 each
- Pad, isopropyl alcohol impregnated, 5 pads
- Pad, povidone-iodine impregnated, 5 pads
- Shears, trauma, 7 inch length, 1 pair
- Occlusive dressing, 1 package
- Skin Stapler, 1 each



Photo courtesy of DHS

Glossary

Afterdrop	Continual decrease in temperature during warming therapy caused by the return of cold peripheral blood to central circulation.
Agonal	Slow, shallow irregular respirations, sometimes seen in dying canine
Arterial Bleeding	Bleeding from injured arteries, more likely in groin, armpit, deep neck, leg, and paw wounds. Usually bright red color, spurting or flowing rapidly from injury site.
Ataxia	Failure to produce smooth, intentional movements.
Axillary	The area situated at the caudal aspect of the front limb immediately proximal to the elbow.
Bloat	See Gastric Dilatation Volvulus.
Caudal	Describes parts of the head, neck, and trunk positioned toward the tail from any given point.
Cornea	The transparent layer forming the front of the eye.
Cricothyrotomy	Surgical airway management cutting the cricoid and thyroid cartilage.
Dilation	The action or condition of becoming or being made wider, larger, or more open.
Distal pulse	Pulse point situated away from the center of the body. Usually obtained by palpating the radial pulse and or pedal pulses.
Emetic	A drug that causes or induces vomiting
Femur	The thigh bone.
Frostbite	Freezing of skin tissues.
Gastric Dilatation Volvulus	Rapidly progressive life-threatening condition in which the stomach becomes overstretched and rotated by excessive gas content (also known as Bloat).
Gastropexy	Procedure performed on canine to attach the stomach to the abdominal wall or diaphragm to reduce the risk of hiatal hernia, chronic dilatation, or volvulus.
Hemothorax	The accumulation of blood in the chest cavity.
Hemorrhagic Shock	Shock caused by massive blood loss.
Humerus	Upper foreleg bone.
Hypotension	Low blood pressure.
Hypoxemia	Low blood oxygen levels.

Hyperthermia	A canine body temperature more than 103.5°F; a body temperature higher than normal; Note: A canine's body temperature can rise to 107°F with no ill effect.
Hypothermia	A canine body temperature less than 97°F; a body temperature lower than normal.
Ischemic Injury	Damage to the tissues caused by decreased blood flow.
Lateral	Farther away from the midline; to or on the side of something else.
Lacrimation	Secretion and discharge of tears, especially in excess.
Obtunded	Diminished arousal or awareness, often the result of metabolic illness, infection or neurological catastrophe.
Patent Airway	Airway that is clear and open.
Pinna	Ear flap.
Pneumothorax	Air in the chest cavity which prevents the lungs from inflating.
Primary Survey	A rapid examination used to target the most critical body systems in order of importance to detect serious problems. This survey should be done in less than 2 minutes.
Pulmonary Edema	Fluid buildup in the lungs.
Radius	One of two bones of the lower foreleg of a canine.
Rewarming Shock	Develops with excessively rapid warming and is due to the sudden development of systemic vasodilatation. This vasodilatation causes hypotension at a time when the circulatory system may not be able to react
Systemic Vasodilation	Widening of blood vessels, decreases systemic vascular resistance thus lowering arterial blood pressure.
Thorax	Upper chest in a canine containing many of the major organs including the heart, lungs, and liver.
Tibia	One of two bones of the lower hindleg in a canine.
Tissue Necrosis	Death of body tissue that occurs when there is not enough blood flowing to the tissue, whether from injury, radiation, or chemicals.
Trachea	Wind pipe; tube made up of sturdy rings of cartilage through which air is transported to and from the lungs.
Tracheostomy	Surgical procedure in which a new opening is created in the canines trachea or wind pipe to facilitate the passage of air or the evacuation of secretions.
Ulna	One of two bones of the foreleg of a canine.
Vasodilatation	Widening of blood vessels.
Venous Bleeding	Bleeding from injured veins. Usually dark color, oozing from injury site.

Acronyms

BAR	Bright, Alert, Responsive
BCLS	Basic Cardiac Life Support
BCS	Body Condition Score
BPM	Beats Per Minute or Breaths Per Minute
CAB	Circulation/Compression, Airway, Breathing
C-PTSD	Canine Post Traumatic Stress Disorder
CNS	Central Nervous System
CPR	Cardiopulmonary Resuscitation
CRT	Capillary Refill Time
CUF/DTC	Care Under Fire/Direct Threat Care
DHS	Department of Homeland Security
EMS	Emergency Medical Services
IFAK	Individual First Aid Kit
IWR	Ideal Weight Range
GDV	Gastric Dilation Volvulus Syndrome
M³ARCH²	Mnemonic device: Move to safe cover; Muzzle the canine for safety; control Massive bleeding; ensure an open Airway; treat Respiratory distress; treat Circulatory failure; treat or prevent Hypothermia; manage Head injury
POC	Point of Contact
PTX	Open Pneumothorax
QAR	Quiet, Alert, Responsive
SLUDGE	Mnemonic device to recognize signs of nerve agent, organophosphate, and carbamate toxicity
SOP	Standard Operating Procedure
TBI	Traumatic Brain Injury
TBSA	Total Body Surface Area
TCCC/TECC	Tactical Combat Casualty Care/ Tactical Emergency Casualty Care
TFC/ITC	Tactical Field Care/Indirect Threat Care
WD	Working Dog

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