Operational K9s (OpK9s) consist of Law Enforcement (LE) canines, Force Protection K9s, and Search and Rescue (SAR) canines that serve Federal, State and Local governmental and non-governmental organizations. These animals have continuously proven to be a force multiplier in the success of many military, law enforcement, Search-and-Rescue (SAR), and humanitarian operations. Operational K9s selflessly dedicate their lives to protect us, defend us, and lead the way in times of danger. Although the absolute number of non-military OpK9s serving in the United States remains unknown, many estimate greater than 40,000 to 50,000 are in service. The war on terror along with increasing active shooter and disaster events over the past few decades have significantly increased the demand for these invaluable K9 operators to help safeguard the freedoms of society; therefore, their numbers continue to grow.

The increased utilization of OpK9s across the globe has also subjected them to an increase in risk of injury and death while in the line of duty (LOD). Stojsh et al. conducted an analyses on the causes of death of civilian law enforcement canines from 2002 to 2012; the data analyzed was as reported on two working dog and law enforcement officer memorial websites. From their analyses the three leading reported causes of canine line of duty deaths (LODD) included: vehicular trauma, 25.8% (82/318); heatstroke, 24.8% (79/318); and penetrating ballistic trauma, 23.0% (73/318). Since 2013, anywhere from 20 to 34 OpK9 LODDs are recorded annually on the K9 Officer Down Memorial Page (ODMP) (http://www.odmp.org/k9). Causes of these LODDs include: animal related; automobile accident; drowned; fire; gunfire; heat exhaustion; poisoned; stabbing; and struck by vehicle. Over this time period, gunfire and heat-related illnesses remain that top two causes of LODDs in this population of OpK9s.

Consider, though, these only include the OpK9 deaths that are reported to the K9 ODMP website. The numbers listed on the website for LODDs/year likely under-represents the actual number of OpK9 deaths, since many unreported.

Similar to their human counterparts, OpK9s deployed in a tactical or high threat environment remain at high risk for suffering preventable deaths. Despite their invaluable contribution in safeguarding our society’s freedoms, prehospital trauma care (e.g., availability, standardized guidelines, funding, training, logistical resources, research, etc.) for these OpK9s remains lacking. Factors hindering the availability and provision of such care include lack of: a) Veterinary Emergency Medical Service (VEMS) services to render prehospital medical services, b) generally accepted “standards of care” for prehospital first-aid and life support applicable to the EMS provider (EMSP), and c) standardized training courses and certifications (national or state) in veterinary prehospital care for EMSPs.

Attempts to develop standardized veterinary prehospital guidelines and courses have been hampered by the interpretation of current state laws governing veterinary medicine that such treatment by non-veterinary paraprofessionals is considered “practicing veterinary medicine without a license”. As such, not only would such acts be considered out of the scope of practice of an EMSP, but also in violation of the state’s Veterinary Practice Act / Legislative Code which subjects the EMSP to legal reprisal.
Without clear legal authority defined in the state’s VPA or EMS legislative codes, the EMS community is open to the potential risk of liability and legal reprisal when and if they choose to render out-of-hospital emergency care to animals.

**FUTURE EXPECTATIONS**

It is of the K9 TECC Working Group expectation that:

- Operational K9s injured in the Line of Duty are afforded the opportunity to receive the highest level of resuscitative care at the point of injury, or as far forward as possible, often where the presence of trained and licensed veterinary personnel is lacking.

- Non-veterinary Health Care Providers (HCP) should only perform medical or surgical procedures necessary to manage problems that immediately threaten life, limb, or eyesight, and to prepare the Operational K9 for evacuation to definitive veterinary care.

- Protocols for provision of preveterinary, out-of-hospital care of injured OpK9s by HCPs/EMSPs are developed through a collaborative working relationship between the Veterinary and HCP/EMS organization.

**PURPOSE**

The purpose of this position paper is to bring awareness to the Veterinary and EMS communities regarding the main challenges hampering the provision of appropriate and timely prehospital care for Operational K9s injured in the line of duty. The goal is to invoke a collaborative initiative between the two communities to resolve these challenges in order to provide the best care possible to OpK9s.
**K9 Tactical Emergency Casualty Care Working Group**

**CHALLENGE ONE:**
Lack of Standardized Prehospital Care Guidelines

In human trauma care, the National Association of Emergency Medical Technicians (NAEMT) has standardized the approach to civilian non-tactical, prehospital trauma care with the development of the Prehospital Trauma Life Support (PHTLS) program. For the tactical, high-threat scenario the Committee for Tactical Emergency Casualty Care (www.c-tecc.org) has drafted and published evidence-based, best practice Tactical Emergency Casualty Care (TECC) principles for the tactical EMS (TEMS) community. Both PHTLS and TECC have gained international acceptance and remain a vital component for improving prehospital trauma survival rates in humans.

In veterinary medicine, a standardized veterinary prehospital trauma curriculum does not currently exist. For MWDs, the K9 Combat Casualty Care (K9CCC) Committee formed in 2019 as an affiliate member to the Committee on TCCC (CoTCCC) to help fill critical knowledge gaps and standardize battlefield prehospital trauma care for the MWD. As its priority mandates, the K9CCC Committee focused initially on the development of best-practice canine TCCC (K9TCCC) guidelines customized for the tactical and combat environment. These K9TCCC guidelines are now available on the Deployed Medicine website (https://deployedmedicine.com/market/51/content/1098) and slated for publication in the Spring 2020 edition of Journal of Special Operations Medicine.

K9 TCCC guidelines are based on military battlefield document and do not account for the factors that are unique to the civilian OpK9 serving in a non-combat, but high threat environment (e.g. available resources, operational environment, occupational hazards, injury risks). The value of applying K9 TCCC principles to the civilian Operational K9 remain questionable. K9 TCCC principles mirror human TCCC principles addressing the three known preventable deaths for the human combat casualty (massive extremity hemorrhage, airway obstruction, tension pneumothorax). Current data does not support extremity hemorrhage as a major cause of death in K9s. In addition, a review by Miller et al. in 2018 revealed “Explosion/Blast” injury as one of the second leading causes of battlefield-related death for deployed MWDs; this is not a reported cause of LODD for domestic non-military Operational K9s.

The need for standardized prehospital guidelines applicable to the civilian OpK9’s environment fostered two major initiatives: the American College of Veterinary Emergency and Critical Care’s Veterinary Committee on Trauma (VetCOT), Prehospital Subcommittee and the K9 Tactical Emergency and Casualty Care (K9 TECC) Working Group. In March 2016, VETCoT’s Prehospital Subcommittee published their peer-reviewed “Best Practice Recommendations for Prehospital Veterinary Care of Dogs and Cats” (Hanel R, Palmer L, et. Al., 2016). Similar to human based PHTLS guidelines, VETCoT’s best practice recommendations are intended to provide guidance to non-veterinary healthcare paraprofessionals, canine handlers and pet owners on the clinical management of out-of-hospital traumatic and environmental injuries common to dogs and cats. One point of consideration is that these guidelines were developed for providing prehospital medical care applicable to a non-tactical, low threat scenario; they did not necessarily take into account the constraints of providing prehospital care during a high-threat or tactical situation.
To fill the void in standardizing out-of-hospital POI casualty care for OpK9s deployed in a high-threat or tactical environment, the K9 TECC working group formed in December 2014. K9 TECC’s intent is to develop best practice recommendations for eliminating preventable LODDs in OpK9s exposed to non-military high-threat environments. The working group consisted of experts in tactical medicine, veterinary medicine, EMS/fire, SAR, military Special Operations and K9 handlers from various disciplines. K9 TECC blended evidence-based medicine with practical experience from users in the field to mold its final recommendations. Similar to the human TECC principles, K9 TECC incorporates three dynamic phases of care: direct threat/hot zone, indirect threat/warm zone and evacuation/cold zone.

Fundamentally, the goals and principles for each phase of care are similar to those of human TECC; however, modifications to the guidelines account for K9-related anatomical, conformational and physiological differences. K9 TECC principles are intended to remain flexible, not rigid, thus, allowing TEMS units, LE agencies, SAR teams and other organizations to adapt the principles to any particular operational task/mission or situational threat. Since it’s modeled off human TECC, K9 TECC should be easily learned and applied by first responders. In December 2016, K9 TECC published their peer-reviewed guidelines which are available on the K9 TECC website at www.k9tecc.org/resources.html.

In humans, standardized trauma care guidelines are associated with improved survival and decreased complication rates. Although no current data evaluating the impact of non-standardized prehospital guidelines in veterinary medicine is available; based on the human experience, standardization should result in improved survival rates for OpK9s. Due to their significant contribution toward achieving mission success and their high risk for sustaining life-threatening injuries, standardized prehospital trauma care principles for OpK9’s need to be developed and taught to first responders.

**Considerations to Mitigate C-1**

The K9 TECC working group was formed with the intent of developing evidence-based, best practice prehospital trauma guidelines for the OpK9 injured in the high threat environment. However, our broader long-term vision is to serve as an advocate for promoting and advancing the availability and quality of Prehospital Veterinary Care and supporting the interests of the OpK9s needs. In efforts to achieve this vision, the Veterinary, EMS and Operational K9 communities along with other prehospital care initiatives and organizations must collaborate to:

- Promote and increase awareness on the needs challenges hindering prehospital care for OpK9s injured in the LOD.
- Develop and routinely update evidence based medicine (EBM) Best Practice recommendations and clinical policies for Veterinary Prehospital Medicine, similar to that of the American College of Emergency Physicians Clinical Practice Guidelines (https://www.acep.org/Content.aspx?id=30060).
- Publish White Papers / Position Papers on key topics of concern in Veterinary Prehospital Care.
- Promote and pursue prospective research and epidemiological analyses in the prehospital care environment.
- Support legislation and policy developments to help make prehospital care more available similar to the legislation (discussed later).
- Develop standardized curriculum content for the K9 TECC guidelines and Veterinary Prehospital Trauma Life Support course (VPHTLS).
CHALLENGE TWO (C-2):
Lack of Out-of-Hospital Emergency Medical Service (EMS) due to interpretation of language in state’s Veterinary Practice Acts

Veterinary EMS resources do not exist in most places nor do veterinary personnel typically deploy as part of a tactical or SAR response element when an OpK9 team is called into action; therefore, out-of-hospital, point of injury (POI) care for these injured K9s remains grossly lacking. The implementation of human EMS services for injured OpK9s is primarily hindered by issues regarding EMS scope of practice. Each state has an established Veterinary Practice Act (VPA) or legislative code/statute that defines the requirements to practice veterinary medicine.

Example citation from American Veterinary Medical Association (AVMA) Model VPA (https://www.avma.org/KB/Policies/Pages/Model-Veterinary-Practice-Act.aspx):
“No person may practice veterinary medicine or veterinary technology in the State who is not a licensed veterinarian or the holder of a valid temporary permit issued by the Board or a credentialed veterinary technician unless otherwise exempt pursuant to Section 6 of this Act.”

In addition, most state’s VPA/statute also outlines specific exemptions to “practice of veterinary medicine without a license”. The K9 TECC working group formed an ad hoc team to investigate which, if any, state VPAs cited an exemption that specifically allow licensed or certified EMSP, in performance and scope of their official duties, to render emergencyprehospital care to Op-K9s injured in the Line of Duty. The findings from the analysis revealed that neither the language cited under Section 6 (entitled “Exemptions”) of the AVMA Model VPA nor most of the State’s individual VPAs explicitly outline a provision for non-veterinary paraprofessionals to render lifesaving emergency prehospital care to OpK9s without the direct or indirect supervision a licensed veterinarian.

The analysis did find that the following exemptions were cited, in some form or fashion, in the AVMA Model VPA and in many of the States’ individual VPAs.

1. **Current Applicable Exemption:**
   “Subject to the State’s [animal cruelty law(s)], an owner of an animal and any of the owner’s regular employees caring for and treating the animal belonging to such owner, except where the ownership of the animal was transferred for purposes of circumventing this Act. Individuals must comply with all laws, rules and regulations relative to the use of medicines and biologics.”

   **Interpretation Exemption 1:** The agency that has purchased the animal (e.g., local law enforcement agency, ATF, FBI, CIA, etc.) is considered the “owner”; therefore, any licensed professional (e.g., EMSP or OpK9 Handler) employed by that organization should have the authority to provide emergency medical care in an out of hospital environment.

2. **Current Applicable Exemption:**
   Any person who, without expectation of compensation, provides immediate veterinary care in the event of an emergency or accident situation.

   **Interpretation Exemption 2:** This statement reflects a “Good Samaritan” law that are used by most State’s EMS laws and statutes and, therefore, would allow the provision of emergency medical aid by First Responders.
Limitation of “Good Samaritan” Exemption:
- Although the Good Samaritan law (GSL) may allow some provision for prehospital care by EMS responders, it may inhibit the ability of EMS providers to render aid to injured operational working animals in the course of their official duties in which they receive compensation for their services.
  - According to the Model VPA, in order for EMSP to qualify for exemption under the GSL, they must perform their services “without expectation of compensation…” As worded, and in its true sense, the GSL does not actually prohibit EMS personnel from receiving compensation for their services, only that they may not expect or request compensation. When on official duty, EMSP are compensated for their actions, so many will interpret this to mean that EMSPs are not protected by the GSL if they render aid to an animal while responding on official duty.
  - Despite its true intent, many still interpret the GSL to infer that EMS personnel cannot receive compensation, whether expected or not, for their services. In some regards, the latter interpretation is preferred by EMS agencies in order mitigate any grey zones in the interpretation of the GSL that may ultimately lead to legal reprisal.
  - The fear of legal reprisal for accepting any form of compensation may limit the ability of EMS agencies to provide prehospital care to injured OpK9s; specifically transport services. Ambulance transports may cost anywhere from $500 to $2,000 (or more) depending upon the location (rural vs. urban), distance transported, and services provided (e.g., transport only vs. administration of oxygen, IV fluids, medications, etc.). The financial loss incurred by transporting and treating an injured OpK9 is not always feasible for some EMS agencies and, therefore, would hinder affording an injured OpK9s access to vital prehospital care and transport.
- The qualifications for the GSL varies from State to State and not all State VPAs possess a GSL for non-veterinary responders; therefore, EMSPs should NOT assume that their actions will automatically fall under protection of a GSL in all states. Additionally, consider that:
  - Some states reject the use of GSL when care is provided by personnel that already have a pre-existing duty to act to injured casualties (e.g., EMSP); this inherently would make EMSP ineligible for protection under the GSL.
  - Prior to rendering aid to an injured OpK9, EMSPs have to take into account whether or not a licensed veterinary professional was within reasonable distance to transport the K9 too rather than attempting to perform a lifesaving intervention themselves.
  - Some states have specific parameters defining what types of patients (e.g. trauma-related) and in what environments (out-of-hospital) the GSL is applicable. Unfortunately, the interpretation and eligibility for protection under the most GSL are left to the subjectivity of the interpreter. This subjectivity may not favor the EMSP; particularly, if the OpK9 succumbs to their injuries and does not survive.
Of interest, the Texas Administrative Code, Title 22, Part 24, Chap. 573.10(j) provides the following clause:

“Exception for Emergency Care. In an emergency situation where prompt treatment is essential for the prevention of death or alleviation of extreme suffering, a veterinarian may, after determining the nature of the emergency and the condition of the animal, issue treatment directions to a non-veterinarian by means of telephone, electronic mail or messaging, radio, or facsimile communication and not be in violation of §801.351 of the Act. However, the Board may take action against a veterinarian if, in the Board’s sole discretion, the veterinarian uses this authorization to circumvent this rule. The veterinarian assumes full responsibility for such treatment. However, nothing in this rule requires a veterinarian to accept an animal treated under this rule as a patient under these circumstances.”

Although the language of TAC 573.10 affords a potential avenue for allowing EMSPs to render emergency prehospital care to an injured OpK9, it is cautioned that this code stills warrants direct communication/consultation between the EMSP and a veterinarian for EACH individual case. Since the code directly states that their license is subject to action by the board and they must accept full responsibility for treatments rendered, many veterinarians will remain reluctant to direct non-veterinary personnel (particularly, those they do not know) to render aid to an injured animal.

**CONSIDERATIONS TO MITIGATE C-2**

Although, the aforementioned ‘exemptions’ may allow prehospital services by non-veterinary, paraprofessionals, the current language lacks specificity and remains open to interpretation. This hinders EMS agencies and other non-veterinary first responders from rendering emergency prehospital care to OpK9s due to fear of legal reprisal for practicing veterinary medicine without a license.

**K9 TECC recommends** the AVMA and each individual State insert an additional Exemption Clause to provide limited authority to EMSPs to “Practice Veterinary Medicine without a License” into their respective VPAs/statutes. By allowing trained EMSPs, in the performance of their official scope of duties, to render lifesaving emergency prehospital care to OpK9s without direct or indirect supervision of a licensed veterinarian, the additional exemption clause allows injured OpK9s to receive appropriate and timely prehospital care.

An example of a proposed Exemption statement follows:

“License Requirements Exemption:
When a licensed veterinarian is not available within a reasonable length of time, Emergency Medical Services may be rendered to Operational Working Animals by non-veterinary licensed individuals without the direct or indirect supervision of a licensed veterinarian, under the following conditions:

1. A non-veterinary, licensed or certified emergency medical responder is acting in the course of their official duties AND up to the level of their training and jurisdictional scope of practice in human patients AND the person(s) is acting with informed owner consent from the owner / client when available, OR

2. The person(s) is/are an employee of the agency that owns or has medical authority over the animal (e.g., applicable to K9 Handlers and EMS personnel assigned within the agency); OR
3. The person(s) is/are performing these tasks in compliance with a written protocol developed and approved in consultation with a licensed veterinarian,

4. The above person(s) rendering aid MUST:
   
   a. Have the intent to transfer the animal to a licensed veterinarian’s care as soon as practical, and
   
   b. Have received proper training in First Responder care for the species of Working Animal injured, and
   
   c. Comply with all laws, rules and regulations relative to the use of medicines and biologics, as it pertains to their scope of practice when rendering aid to human patients, AND
   
   d. Shall not diagnose, prescribe or perform surgery.
CHALLENGE 3 (C-3):

Lack of Language in Current State EMS Practice Acts and Statutes allowing for Prehospital Medical Care to Animals by EMS Personnel without Direct or Indirect Veterinary Oversight

Similar to each states’ VPAs, most States fail to provide language authorizing (or prohibiting) EMSPs from rendering aid to animals. However, recognizing the vital need to provide non-veterinary, prehospital care to OpK9s injured in the LOD, the veterinary and EMS communities in various states have come together to started introduce legislation granting EMSPs some degree of legal authority to voluntarily render emergency preveterinary care to OpK9s (and in some states, all domestic dogs and cats):

- **Colorado**, Senate Bill (SB) 14-039 “Preveterinary Care Act”, 2014.  


- **Maryland**, Senate Bill 269, 2017. *Emergency Veterinary Care – Immunity From Liability*  
  https://legiscan.com/MD/bill/SB269/2017


  https://docs.legis.wisconsin.gov/2017/related/acts/166

  https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1305
  https://leginfo.legislature.ca.gov/faces/billCompareClient.xhtml?bill_id=201720180SB1305

The following States have drafted and introduced legislation:


- **Florida**, SB 842: Injured Police Canines  
  https://www.flsenate.gov/Session/Bill/2020/842/?Tab=BillText

- **New York**, Assembly Bill A7608A, introduced May 2019. A61,  
  https://legislation.nysenate.gov/pdf/bills/2019/A7608A

- **Pennsylvania**, Section 8332(d) of Title 42 of the Pennsylvania Consolidated Statutes is amended and the section is amended by adding subsections to read: § 8332. “Emergency response provider and bystander good Samaritan civil immunity”. This Bill has not been able to get out of committee 2 years in a row as a perceived lack of need i.e. there has been no criminal or civil action in the past or anticipated by owners of “Police dogs” in PA
The following states have passed legislation providing EMS agencies the legal authority to transport injured Operational K9s in ambulances (aka “Transport Laws”):

  
  http://webserver.rilin.state.ri.us/BillText/BillText20/HouseText20/H7124.pdf

- **New York, Senate Bill S4990A** https://www.nysenate.gov/legislation/bills/2015/s4990  

- **Mississippi Senate Bill 2091** that allows emergency medical staff to transport police dogs injured in the line of duty to a nearby vet or hospital for care. This went into effect 1 July 2018  

- **Illinois House Bill 2661**:  

- **Michigan Senate Bill 1234**  


Other State Initiatives:

- **Texas**  
  o Establishment of the "Texas Operational Canine Care Committee" a 501c nonprofit organization with the intent of developing standardized evidence-based treatment guidelines to prevent death and disability to injured or ill Operational K9s in the state of Texas.  
  https://www.facebook.com/Texas-Operational-Canine-Care-Committee-466344547482411/

- **South Carolina**  
  o Mount Pleasant Fire Department – Paramedic, Shane Himes, developed and started an "Advanced Life Support Police K9 Medical Program" for paramedics relating to prehospital treatment of an injured Police K9. An initiative developed via a collaborative effort between SC Dept. of Health and Environmental Control and SC Board of Veterinary Medicine.
The K9 TECC working group advocates that each state’s EMS organization petition their legislature to enact similar statutes / legislation as cited above. The legislation should provide immunity for EMSPs that render emergency prehospital care to injured OpK9s injured in the line of duty without the direct or indirect supervision of a licensed veterinarian as well as provide immunity for veterinary personnel that train EMSPs in Veterinary Prehospital Care / EMS interventions. For states to get their own legislation approved and accepted, it is necessary to have a cooperative, cohesive working relationship between the State Veterinary and EMS Regulatory agencies. For further discussion and lessons learned from processes pursued in other states contact lpalmer2508@gmail.com.
**Challenge 4 (C-4):**

Concern for Lack of Veterinary Oversight if Non-Veterinary Personnel are allowed to provide Medical Care to Animals without Direct or Indirect Veterinary Oversight

In order to foster a change in state legislation allowing non-veterinary first responders and EMSPs the authority and immunity to render emergency prehospital care to injured OpK9s, EMS and Veterinary communities must partner together on this common front. Although, opposition to legislative change is voiced from both the EMS and veterinary communities, the greatest opposition for promoting legislative change is often encountered from the veterinary community. Some of the reasons cited by opponents in the two communities include:

**EMS Opposition:**
- Legal ramifications of practicing veterinary medicine without a license.
- Potential risk of zoonotic diseases associated with handling animals.
- Implications on abusing the 911 emergency system for pet emergencies.
- Availability and time required for training EMSPs to proficiently perform Veterinary EMS care.

Fostering additional language in State statutes and codes to authorize preveterinary care by non-veterinary HCPs/EMSPs (as discussed in **Challenge-3**) mitigates concerns of legal reprisal. To quell any concern with the public abusing the 9-1-1 emergency system for sick pets, than part of the legislation drafted should include a statement to the effect of:

> “This act does not grant permission for the public to request 9-1-1 emergency services solely for their pet’s emergencies or sickness. Instead, the act only permits (not require) licensed EMSPs, that have already responded to an incident (e.g., fire, accident, or other emergency scene) involving humans, the authority to voluntarily render emergency care for injured animals at the scene and until transfer to veterinary care”.

Zoonotic transmission risk and training requirements are discussed later in this paper.

**Veterinary Opposition:**
- Lack of veterinary oversight of the medical care provided by potentially untrained, non-veterinary EMSP/HCPs.
- Risk of losing value and hold in society if non-veterinary HCP becomes trained and authorized to ‘practice’ of veterinary medicine.

The concerns from the veterinary community opposing such legislative change are not completely unfounded, nor do they come without validity; particularly, the concern regarding the lack of oversight for medical care provided by EMSPs not trained in veterinary first aid. Fundamentally, the physiology between humans and K9s is quite similar, therefore, allowing many of the medical interventions and techniques used in human EMS directly applicable to K9s (e.g. hemostasis via direct pressure and wound packing). However, there are several unique anatomical, physiological, and pharmacological species differences that hinder direct application of human first responder knowledge and skills to K9s. Some examples of differences include:

- **Tourniquets:** Human-designed commercial windlass tourniquets tend not to work effectively for upper extremity hemorrhages in K9s due to their tapered conformation, nor are tourniquets typically needed to stop extremity hemorrhage in K9s (direct pressure is preferred) due to a lower proportion of highly vascular muscle mass in the K9 extremity as compared to humans.
• **Gastric Dilatation and Volvulus or GDV (aka. “Bloat”):** OpK9s may suffer GDV that would require gastric needle decompression in the field using a large bore catheter (e.g., 14 GA x 3.25”). Gastric decompression is not a technique EMS personnel are routinely trained to deal with or perform.

• **Heat Dissipation:** Canines do not have the same functional eccrine sweat glands located throughout their body as people. Instead, when ambient temperatures near the OpK9’s core body temperature, they rely predominantly on evaporative losses through panting instead of perspiration through sweating to dissipate heat and mitigate heat-related injuries. For safety concerns, it is not uncommon for people unfamiliar with OpK9s to initially place a tight-fitting muzzle to prevent getting bit. Although, personal safety is always a top concern for any first responder, wherein placing a muzzle is often appropriate, it is important to understand that an OpK9 needs to pant to facilitate heat dissipation. An open basket type muzzle such as the Baskerville, [https://www.companyofanimals.us/brands/baskerville-muzzles](https://www.companyofanimals.us/brands/baskerville-muzzles) allows panting and heat dissipation while protecting the responder.

• **Prevalent traumatic injuries:** The three most common preventable deaths reported in human combat casualties are massive extremity hemorrhage, upper airway obstruction, and tension pneumothorax. To date, the most common preventable deaths in OpK9s remains unknown; however, a recent analyses officer memorial webpages evaluating the most prevalently reported trauma related deaths in civilian OpK9s revealed the three leading causes of traumatic OpK9 deaths were: vehicular trauma, 25.8% (82/318); heatstroke, 24.8% (79/318); and penetrating ballistic trauma, 23.0% (73/318).

These are only a few of the species differences that EMSPs may experience. Even though the majority of the injuries encountered by the EMS providers may primarily only require basic “ABC” interventions (e.g., direct pressure, oxygen supplementation, etc.), the need for more intensive interventions requiring the provider to have a basic knowledge of K9 anatomy and physiology is always possible. As a result, the opposition from the veterinary community is based on the premise of “Do No Harm”.

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**CONSIDERATIONS TO MITIGATE C-4**

In order to belay any major concerns regarding the lack of veterinary oversight with administration of prehospital care by non-veterinary EMSPs, the K9 TECC working group proposed “Exemption Clause”, cited above, provides criteria that state governing bodies should consider when drafting changes the their VPA’s. The bold and underlined words and phrases in the proposed exemption clause below constitute the criteria that may help further mitigate any concern for lack of veterinary oversight:

Proposed Exemption Clause with Explanations:

“**License Requirements Exemptions:**

When a **licensed veterinarian is not available within a reasonable length of time,** Emergency Medical Services may be rendered to Operational Working Animals by non-veterinary licensed individuals without the direct or indirect supervision of a licensed veterinarian, under the following conditions:

**Justification:** The addition of the above underlined phrase will hopefully ensure the EMS service will only provide emergency prehospital care when no veterinary resources are available within a “reasonable amount of time”. The reasonable amount of time will vary for each situation and injury mechanism, however, many will consider a < 20 minute transport time from POI to reception of definitive care as a reasonable amount of time for pursuing “Scoop and Run” to the nearest Veterinary Treatment Facility (VTF).
1. A non-veterinary, licensed or certified emergency medical responder is acting in the course of their official duties AND up to the level of their training and jurisdictional scope of practice in human patients AND the person(s) is acting with informed owner consent from the client when available, OR

Justification: Since there are different levels of scope of practice for human EMSPs (e.g., EMT-Basic, Advanced EMT, Paramedic, etc.) the above statement ensures the EMSP does not perform procedures outside their scope of practice that may cause further harm to the OpK9 and constitute “negligence”. In addition a list defining the scope of practice for each provider level may also be included in the VPA.

2. The person(s) is/are an employee of the agency that owns or has medical authority over the animal (e.g., applicable to K9 Handlers and EMS personnel assigned within the agency); OR

3. The person(s) is/are performing these tasks in compliance with a written protocol developed and approved in consultation with a licensed veterinarian,

Justification: Addition of this statement will hopefully foster a cohesive partnership between EMS agencies and VTFs and at least allow an avenue for indirect veterinary oversight. Together the Medical Director of the EMS agency and VTF may work together to develop veterinary-approved prehospital protocols that are appropriate for the EMS providers scope of practice and available resources (see further explanation under “Memoranda of Understanding” Section).

4. The above person(s) rendering aid MUST:
   a. Have the intent to transfer the animal to a licensed veterinarian’s care as soon as practicable, and
   b. Have received proper training in First Responder care for the species of Working Animal injured, and
   c. Comply with all laws, rules and regulations relative to the use of medicines and biologics, as it pertains to their scope of practice when rendering aid to human patients, AND

Justification: Similar to EMS requirements for treating human patients, it should be a requirement that EMS agencies supporting Op-K9 units receive training in K9 First Responder Care. As mentioned earlier, unique species differences may hamper EMS providers from providing appropriate field care to an injured Op-K9 and or place the EMS provider at a liability risk for ‘negligence’. This statement also carries the intent of fostering a working relationship between EMS agencies and VTFs. The goal would be that VTFs provide an avenue for training partner EMS personnel in K9 First Responder care as well as potentially allowing them to shadow in the clinics to gain a better understanding of species differences for medical care.

5. Shall not diagnose, prescribe or perform surgery

Additionally, the VPA may further define what constitutes as “Emergency life-saving interventions”. For example, South Carolina’s Regulation 120-9 (B); Section B. (4) defines “Emergency Conditions” as:

(a) Life-saving aid and treatment:
   i. Apply tourniquets and/or pressure bandages to control hemorrhage.
   ii. Resuscitative procedures.
   iii. Apply temporary splints or bandages to prevent further injury to bones or soft tissues.
   iv. Apply appropriate wound dressings and external supportive treatment in severe wound and burn cases.
   v. Perform external supportive treatment in heat prostration cases.
   vi. Place intravenous catheters and administer pharmacological agents and fluids
One note of caution from lessons learned, if the legislation specifically lists the interventions an EMSP is authorized to perform, then legally, they are the only interventions the EMSP may perform, even if other interventions are directed by a licensed veterinarian.

Again the goal of the added exemption is to legally afford non-veterinary licensed paraprofessionals the authorization to render initial life-saving resuscitation and stabilization for injured OpK9s in emergent situations when no veterinary personnel are readily available.
**CHALLENGE 5 (C-5):**
Lack of Working Partnership between EMS and Veterinary Communities

On a national level, a working partnership and line of communication between the EMS and veterinary communities is currently lacking. Although in a few locations, particularly larger cities (e.g. New York, Los Angeles, etc.), privately-owned entities have established an ambulance service for transporting injured or critically ill veterinary patients; however, to date, there currently is no mechanism or funding readily available for establishing a nationwide or even state-wide veterinary EMS agency.

Lack of veterinary EMS jeopardizes the welfare of the OpK9. In addition, when a human EMS unit responds to scene and is asked to render aid and or transport an injured OpK9, this request places the EMS unit in a difficult situation. Most EMS teams would love to oblige the request and help the OpK9; however, they remain at risk for both legal and medical liabilities by doing so. As discussed elsewhere in this paper, the liability issues may be mitigated by a change in the language cited in current state EMS statutes and VPAs. Beyond the challenges of changing language in the aforementioned legislature, developing a working relationship between EMS agencies and veterinarians may provide an avenue for establishing indirect veterinary oversight which, therefore, may mitigate some of the liability issues. In addition, funding and resources to establish a nation-wide veterinary-based EMS system is also grossly lacking. Since a human EMS system is already established, it seems reasonable that the veterinary community would want to take steps to support and become involved in an already established service; if for no other reason, than the added care and chance for survival it could provide veterinary casualties.

**CONSIDERATIONS TO MITIGATE C-5**

**Memoranda of Understanding (MOU):** Consider drafting a MOU to be used between EMS Agencies and local Veterinarian / Veterinary Treatment Facilities (V/VTF). Within the MOU, a partnership can be established between the Medical Director of the EMS agency and the Medical Director (or equivalent representative) of the local VTFs. The MOU will hopefully serve to foster a cohesive partnership with EMS agencies and V/VTF. Although each MOU will be individualized based on the needs of the entities involved but an MOU should serve the purpose of:

1. Establishing liaisons between the V/VTF and EMS agency to foster a:
   a. Direct line of communication between EMS personnel (either EMS Medical Director or EMS responders) and the Veterinarian or V/VTF to discuss and resolve any treatment issues while the patient is en route to the V/VTF.
      i. If the EMS Medical Director has established the direct line of communication with V/VTF during a call, then medical Director will relay the veterinarian(s)’ recommendation to their responding EMS providers.
b. Partnership that allows EMS providers to receive initial and annual refresher training in K9 First Responder care as well as veterinary personnel gaining an understanding of what resources and capabilities EMS providers have available.

c. A quality assurance program that affords a process for V/VTFs to review the EMS provider’s veterinary skills and knowledge. (Ex. monthly morbidity and mortality rounds, grands rounds to discuss common cases EMS personnel, or monthly protocol meetings to evaluate if changes need to be made to current protocols and or standing orders).

2. Identifying locations, resources, and hours of operations for V/VTFs in the EMS agency’s area of operation. This information becomes important for Pre-mission threat assessments during tactical EMS responses.

3. Allowing an avenue for indirect veterinary oversight for the administration of emergency prehospital medical care to injured animals by non-veterinary licensed paramedical professionals.

   a. The licensed veterinarian and EMS Medical Director work together to develop veterinary-approved medical protocols and standing orders for prehospital K9 care. Protocols are based on the current training and resources the EMS providers have on hand during a response. The Medical Director provides these veterinary approved protocols to their responding units to follow when rendering care to an injured animal.

   b. Veterinary approved protocols will also help mitigate any potential liability issues regarding “standard of care” which is often the basis for evaluating a claim of negligence in human EMS. The standard of care is determined by what a reasonable, prudent EMS provider of similar training, skills, and experience would do in like circumstances.

      i. When establishing protocols for EMS providers, veterinarians should refer to available veterinary best practice guidelines such as the Veterinary Committee on Trauma’s Best Practice Prehospital Care Recommendations for Companion Animals or the K9 Tactical Emergency Casualty Care (K9 TECC) Principles.

   c. In addition, the Medical Director and Licensed Veterinarian may partner together to develop an approved list of prehospital medications that an Advanced First Responder (AEMT / Paramedic) may administer provided that the AEMT/Paramedic:

      i. Is under direction of the Medical Director and or Licensed Veterinarian, and
      ii. Has received appropriate training regarding the administration of such medications.

   d. A medication that does not appear on the approved list SHALL NOT be added to the department's protocol without prior consultation between the EMS Medical Director and Licensed Veterinarian
4. Further stipulations to consider incorporating into the MOU to ensure quality control of care and allow the EMS providers to assume responsibility of OP-K9 care may also include:

   a. Medical Control and the V/VTF must be informed that EMS services are responding for an OpK9
   b. Approval to provide services to an OpK9 must be authorized by the EMS agency’s Medical Director
   c. The EMS responder must be willing to assume responsibility for the OpK9 until relieved by a veterinarian that has an active, current state veterinary license
   d. The Medical Director must not require their EMS professionals to perform any procedures or institute any treatment that is beyond the provider’s scope of practice and or they are not trained to perform on a K9
   e. The EMS provider will be held to the same standards of negligence and abandonment as pertains to human patients
      i. The defining parameters of negligence include:
         1. Duty to act
         2. Breach of Duty
         3. Breach of duty caused an effect
         4. Damage has been inflicted by another
      ii. Medical Abandonment is generally considered when the caregiver-patient relationship is terminated without making reasonable arrangements with an appropriate provider so that appropriate care may be continued.
         1. In this instance, the EMS provider should maintain responsibility of care until the K9 is transferred to a veterinary representative that is licensed or certified in the state in which the injury occurred.
Human Emergency Medical Service (EMS) concern for zoonotic pathogen transmission and contamination of medical assets used on human patients subsequent to treating injured OpK9s

Depending on your practice location and species you treat, the list of zoonotic threats will vary. Some of the more common infectious diseases for EMS providers to consider when handling an OpK9 include oral contact diseases [e.g. salmonellosis, campylobacteriosis, toxoplasmosis, and gastrointestinal parasites (e.g., giardia, cryptosporidium, tapeworms, roundworms, and hookworms)], skin break- or acquired disease (e.g. rabies, leptospirosis, bartonellosis, brucellosis, and tularemia), inhaled infections (e.g. histoplasmosis and tuberculosis), and contact diseases (e.g. ringworm and sarcoptic mange).

Rabies and leptospirosis are probably the two most concerning zoonotic risks; however, nearly all OpK9s are vaccinated for rabies and most are vaccinated against leptospirosis. Similarly, nearly all OpK9s are treated preventively for gastrointestinal parasites; therefore, transmission of these pathogens become less of a zoonotic risk as well. Suffering a bite wounds is a hazard when working around injured and painful canines. Considering the number of bacteria residing in the canine mouth, bite wounds may easily become infected, but pursuing immediate and appropriate medical treatment for the wound mitigates the risk of infection from developing.

**CONSIDERATIONS TO MITIGATE C-6**

Considering many of the aforementioned pathogens are transmitted via direct contact with organisms, then the same safe work practices and training in biosecurity and infectious disease management that EMS providers implement and receive to prevent transmission of infectious diseases when handling human patients (e.g., HIV, hepatitis, etc.) also provide protection for reducing many of potential zoonotic risks from K9s. Although the concern for transmission of zoonotic pathogens is valid, the actual risk is no greater than the risk of infectious disease transmission from human patients.

Safe work practices include:

- Donning appropriate personal protective equipment (e.g., gloves, eye and face protection, etc.),
- Washing hands after working with animals and before eating or drinking
- Keeping hands away from mouths and eyes
- Thoroughly cleaning and disinfecting non-disposable equipment after contact with K9s
- Disposing of any contaminated bedding or other disposable items that come into contact with animals
- Maintaining a K9 specific medical bag / pack.
Recommended training for EMS providers to pursue for handling injured OpK9s include:

1. K9 Biosecurity and Infectious Disease Management to include:
   - Common K9 zoonotic diseases and routes of disease transmission
   - Standard precautions that are used in treating K9 patients to prevent infection
   - Appropriate personal protection from airborne and blood borne pathogens
   - Post-exposure management of bite wounds and or exposure to K9 body fluids
   - How to decontaminate the ambulance and equipment after treating K9s
CHALLENGE 7 (C-7):
Human Emergency Medical Service (EMS) Injury Risk subsequent to Handling Injured OpK9s

Operational K9s have a very different set of drive, focus, and alertness for surrounding events and potential approaching threats as compared to the typical everyday companion dog; particularly those OpK9s tasked as part of a tactical response team. Many law enforcement (LE) K9s inherently are selected for controlled dominance and aggression, lack of fear, and drive to bite on command. For those LE K9s, in particular, it becomes nearly impossible for just any one to approach or handle them safely. Even the most obedient and docile SAR K9 may become dangerous and unpredictable to handle when the stress, pain, and or “fear” associated with a traumatic event is added into the situation.

Canine handlers are trained how to properly and safely work around and restrain their OpK9. Due to the close bond and trusting relationship a K9 handler and OpK9 have developed as a team, it seems evident that the K9 handler is the best person to handle and care for their injured OpK9. In addition, handlers typically have the most accurate information about the OpK9s past and current health-related problems; therefore, it is paramount that the handler or their agent is always involved in all aspects of triage, treatment, and evacuation of the K9 casualty.

What happens when the handler gets injured and goes down and is not available to restrain or provide commands for their OpK9? Not only will care be needed for the handler, but someone will need to accept the responsibility of restraining the OpK9 and evacuating them to safety. When faced with these types of situations, then calling upon another trained K9 Handler to approach and restrain the OpK9 would be ideal; however, another handler may not be readily available on scene. In order to gain access to the injured handler quickly, the responsibility to restrain the OpK9 then falls upon the tactical medic or other non-K9 first responder present at the scene.

Approaching and restraining an OpK9 may be no simple task. Although not injured themselves, in stressful situations there are many reasons why the OpK9 may appear aggressive and / or difficult to approach. First consider that it is not in the nature or even in the training of most OpK9s to give into restraint, and most will do anything to protect themselves and their handler when faced with a stressful situation. When their handler goes down, the OpK9 senses something is wrong with their partner; therefore similar to being injured themselves, these K9s will be in a heightened state of stress, anxiety, and awareness, and / or will go into a “protective” mode. In addition, without their handler by their side to provide direction and comfort, the OpK9 may be sent into a state of confusion and disorientation that may make them more unpredictable. To help avoid any undue injury to the first responder team, it is paramount for everyone on a response team (e.g., Tactical, SAR, etc.) that deploys with a K9 team to possess at least basic knowledge on how to properly approach and restrain a potentially aggressive, stressed, and or fearful OpK9.
In order to reduce personal occupational safety hazards subsequent to rendering aid to an injured or uninjured OpK9 that is protecting their downed handler, EMS providers should:

1. Maintain team safety by, when feasible, ensuring the K9 handler is always involved to facilitate handling of their injured K9. If the original K9 handler is also unavailable, it is ideal to have another handler secure the K9. Considering EMS may encounter situations where neither the original handler nor other handler are available, then they should:

2. Receive familiarization training regarding approach to safe K9 handling and restraint to include:
   a. Recognize K9 body language and behavioral cues displayed by the OpK9 during states of fear, aggression, and submission.
   b. Recognize how the provider’s body language may influence K9 behavior and how to alter their approach to make the K9 feel more relaxed.
   c. Proper restraint
      o Positions of restraint (lateral, head restraint, etc.)
      o Using the least stressful technique
   d. Concepts of Muzzling
      o Muzzle types
      o Muzzle application
      o When to and when not to muzzle
   e. Lifting and extrication techniques

3. Partner with K9 units they support to learn common approaches to K9 handling; become familiar with and practice working around, performing a physical examination and taking vitals on Op-K9s.
K9 TACTICAL EMERGENCY CASUALTY CARE WORKING GROUP

Lack of Scientific Evidence-Based Medicine Relevant to Prehospital Trauma Care for OpK9s

Over the past 20 years, out-of-hospital trauma care for the civilian tactical or high-threat environment has undergone a dramatic transformation. The formation of Tactical Emergency Medical Services (TEMS) along with the development of Tactical Emergency Casualty Care best practice recommendations have fostered improved tactics, techniques, and procedures (TTPs) that have greatly enhanced the capability of first responders as well as a prehospital care environment with an improved chance of patient survival. Although much time and research has been placed into improving EMS TTPs for the human casualty, very little time, funding or scientific efforts have been placed into enhancing out-of-hospital trauma care for the OpK9.

Take for example heat-related injuries. Despite heat-related injury being a very common condition and reported cause of death in K9s (Stojsih et al 2014), there remains a very sparse scientific data. Recently, Baker et al. published an evidence-based review evaluating the scientific evidence (or lack thereof) currently surrounding heat-related injuries in MWDs. Their comprehensive review, addressed some very important and elusive topics to include: a) what are the normal and abnormal temperature ranges for athletic dogs undergoing strenuous exercise, and b) what evidence is there to support the best practices or contraindications relating to methods of cooling K9s suffering heat-related injuries. Unfortunately, this review found no viable evidence-based medicine surrounding canine heat-related injuries.

The fact remains that as a veterinary and medical community, there is very little scientific data and / or evidence-based medicine to support what TTPs are most advantageous for treating this special population of K9s. The information used to guide veterinary care for OpK9s mostly comes from anecdotal clinical experience, retrospective analyses of MWDs in combat, or extrapolated from experimental animal models or human observational studies. In regards to available scientific data, it is not uncommon that veterinary trials rarely enroll a population (n) > 30 – 50, and in many cases, have a n ≤ 10; compare that to most human clinical trials that typically enroll a (n) numbering in the 100’s to 1000’s.

To date, three current resources remain available for developing state-specific K9 prehospital protocols:


CONSIDERATIONS TO MITIGATE C-8
It seems obvious that veterinary and EMS communities need to partner together to fund and pursue more scientific-based, prospective clinical trials related to prehospital care for the OpK9. Many governmental agencies (e.g., DHS, TSA, CIA, FBI, USMS, USCBP, USAR, etc.) utilize OpK9s to successfully accomplish their mission; therefore, these agencies have a vested interest in ensuring their K9s receive the best medical care possible. As such, many of these organizations would be open to supporting efforts towards improving prehospital care through scientific research. Considering the large population of K9s these organizations have at their disposal, they serve a viable source for acquiring a sample size that provides adequate power.

With these facts in mind, it seems prudent for the veterinary community to establish a partnership and liaison with these organizations to foster and pursue avenues for clinical research. Some of the prehospital trauma care topics that are currently lacking evidence-based medicine for the OpK9 include:

1. Fluid resuscitation (e.g., Scoop and Run, hypotensive resuscitation, etc.)
2. Appropriate field analgesia and sedation
3. Treatment relevant to heat-related injuries
4. Effectiveness of CPR (CAB vs. ABC, use of AEDs, etc.)
5. Novel hemostatic agents (e.g., Vetigel®, etc)
6. Antifibrinolytics (e.g., TXA, EACA)
7. Advanced airway techniques (e.g., cricothyrotomy, BIAD, etc.)
8. Junctional Tourniquets
9. High-altitude injuries and treatment
10. Field Monitoring devices

REFERENCES:


Please contact the K9 TECC working group at admin@k9tecc.org with any comments, feedback, and questions.