Operation Canine Lifeline: Recommendations for Enhancing Prehospital Care for Government Working Dogs

Teija Corse, MS; Chelsea Firth, MS; John Burke, MS; Kenneth Schor, DO, MPH, FAAFP, CAPT MC USN (Ret); James F. Koterski, DVM, PhD, MSS, DACVPM, COL, VC; Sabrina McGraw, DVM, PhD, DACVP, CPT, VC; Nancy Vincent-Johnson, DVM, MS; Lori Gordon, DVM

ABSTRACT

Operation Canine Lifeline was a tabletop exercise developed by students and faculty of Boston University School of Medicine's Healthcare Emergency Management master's program. The tabletop exercise led to discussion on current protocols for canines working in the field, what occurs if a canine encounters a toxin in the field, and what to do in situations of national security that require working with civilian agencies. This discussion led to the creation of a set of recommendations around providing prehospital veterinary care to government working dogs. The recommendations include a government-run veterinary toxicology hotline for the sole use of the government, issuing handlers deployment kits and preprogrammed smartphones that contain information on the care practices for dogs, and an increased effort for civilian integration, through local emergency medical services, in the emergency care of government canines. (*Disaster Med Public Health Preparedness*. 2016;page 1 of 6)

Key Words: government working dogs, prehospital veterinary care, veterinary toxicology, emergency care, poison control hotline

The US federal government has more than 13 departments and agencies that employ canines in the field. Working dogs are trained in everything from search and rescue to explosive detection to various forms of security, including transportation, border patrol, and policing. Currently, agencies have various protocols for dealing with canines that become sick on the job. These protocols include connecting with the canine's primary veterinarian, using local veterinary hospitals, and if necessary, calling veterinary poison control hotlines, which are available to both government agencies and the general public. Standardizing protocols across all government agencies would allow for more efficient in-the-field treatment of a canine in emergency situations.

Operation Canine Lifeline was a tabletop exercise designed and executed by authors Corse, Firth, and Burke to examine the protocol for caring for a government canine exposed to a toxin while working in an emergency situation. Operation Canine Lifeline examined a made-up scenario of 2 government canines, 1 bomb-sniffing canine and 1 canine that had been trained to detect chemical-biological-radiological-nuclear-explosive (CBRNE) threats, that were exposed in a potential Sarin gas attack in a patient parking garage at Walter Reed National Military Medical Center. The exercise, run with members of Federal Emergency Management Agency Urban Search and Rescue (FEMA-USAR) and the US Army Veterinary Corps, examined what current protocols would call for in treating the 2 dogs and whether a potential government-run poison control hotline, staffed by veterinary toxicologists, could improve response and the treatment of exposed government canines.

Discussion from the exercise highlighted concerns over the speed of treating canines in the field and potential national security breaches. Further discussion led to various recommendations, presented here, for improvements to government protocols pertaining to canine health. The recommendations include the creation of a government-run veterinary poison control hotline available 24-7 for government agencies that employ canines in the field, issuing handlers smartphones and deployment kits for their canines, and better civilian integration in the treatment of canines, with a particular focus on local emergency medical services (EMS). While these recommendations were discussed and worked through during Operation Canine Lifeline, there has not been any further work or data collected regarding the economics of these recommendations. There is also, as later discussed, a lack of public data regarding the frequency of such hazards among government canines. Instead, these recommendations were written as a starting point, to jump-start the discussion on the topic and lead to eventual changes and protocols to protect government canines in the field.

BACKGROUND

Agencies such as FEMA-USAR, the Federal Bureau of Investigation (FBI), the Department of Defense, the Transportation Security Administration (TSA), the US Coast Guard, Federal Protective Services, the US Department of Agriculture (USDA), and many more utilize canines within their organizations. With this wide range of agencies, government canines perform various tasks both nationally and internationally. The cost of government working dogs, including the training and yearly upkeep of canine teams, makes them a very expensive asset to the federal government. In the 2013 fiscal year, TSA requested approximately $96 million in funding for their explosives detection canine program.[1] According to the FBI, costs of purchasing and training a working dog can exceed $50,000, excluding the cost of food, shelter, and veterinary bills.[2] The cost of purchasing a dog alone is expensive, with puppies ranging from $2000 to $10,000, beginner-trained dogs ranging from $5000 to $15,000, and fully trained dogs ranging from $10,000 to $30,000 (Lori Gordon, personal communication, 2015). Government canines are an essential asset to their teams and the high cost of initial purchase, training, and maintenance makes them a highly economically, valuable resource for the government that requires more proactive support to protect their health and well-being.

Canines in the field are at an increased risk of injury and death due to their line of work. According to the Canine Officer Down Memorial Page, the causes of death for canines in 2015 and 2016 were classified as follows (in no particular order): animal-related, automobile accident, drowned, fire, gunfire, heat exhaustion, poisoned, struck by vehicle, asphyxiation, stabbed, and accidental.[3] Besides these causes of injury and death, canines responding in disaster situations are also at risk for potential exposure to various biological, chemical, radiological, and nuclear agents. Research on the Canine Officer Down Memorial Page website showed multiple reports of canine mortality due to toxic exposure, via inhalation or ingestion. While the research covered only working dogs at the local level (city and county police departments), risk of exposure for canines in the field is relevant at the federal level. Federal service dogs are deployed around the country and worldwide to respond to both man-made and natural disasters. They respond to situations that can put their health at risk. For example, one case on the memorial page was an 11-year-old lab named Barney who was a member of the police department in Tacoma, Washington. Barney, a narcotics dog, died from inhaling powdered methamphetamine during the execution of a search warrant.[4] Canine Morgan, of the Mendocino, California, County Sheriff's Office died due to the accidental ingestion of methamphetamine. According to the report, Canine Morgan "was transported to an animal hospital but died as his handler was describing his symptoms to the veterinarian."[5] The time between exposure, getting the canine to the veterinarian, explaining symptoms to the veterinarian, and the potential need for the veterinarian to contact a veterinary toxicologist for a consultation leads to an increased chance that the canine will die before sufficient treatment can be provided. Operation Canine Lifeline was developed to test the idea of a government-run poison control hotline as a quicker way to connect handler, veterinarian, and veterinary toxicologist in order to speed up the treatment process and save the lives of government canines.

In the Operation Canine Lifeline scenario, a duffle bag left near the rear tires of a parked car was found to be suspicious, and a bomb canine was brought to examine the bag. Soon after, the dog began to exhibit symptoms of hypersalivation, constricted pupils, and difficulty breathing, eventually becoming tachycardic, urinating uncontrollably, and vomiting a few times. Opening the duffel bag led to the discovery of multiple canisters, with a hissing noise sounding like one or more of the canisters were leaking. With proper safety precautions taken, a canine trained to detect CBRNE threats was brought to the duffle bag and the dog alerted to something in or on the bag. After a few minutes, the second dog began experiencing similar symptoms as the bomb dog. The exercise continued into a tabletop discussion as to what would be done by canine handlers in response to a visibly distressed canine, what the government protocol is in terms of providing treatment for the canine, and to what extent a government-run poison control hotline, connecting handler, veterinarian, and veterinary toxicologist in one call, could improve current government protocol.

CURRENT POLICIES AND HOTLINES

Government agencies that employ canines each have their own protocols regarding the care and safety of the dogs. Most of these current protocols are not made available to the general public, but a few agencies have made them available online. The USDA's National Detector Dog Manual contains information on procedures, health care, and training associated with their employed canines. The USDA National Dog Detector Manual outlines steps for handlers to follow if they suspect their canine was exposed to a poison. These steps include calling the National Animal Poison Control Center, which is run through the American Society for the Prevention of Cruelty to Animals (ASPCA). The manual instructs the handler to either have a credit card ready to pay the $65 consultation fee or call another ASPCA number that will automatically bill the number that is calling the hotline. Either way, the handler has to pay the consultation fee before speaking to a veterinarian or veterinary toxicologist.[6]

The US Air Force observes the Department of Defense Military Working Dog Program. The online manual, current as of March 2013, addresses the "conditioning and training principles for military working dog teams" and "provides guidance on the operation and management of the military working dog section as well as associated administrative

http://dx.doi.org/10.1017/dmp.2016.171

requirements."[7] It goes into detail on how handlers should decontaminate their canines for different situations, such as exposure to biological agents, nerve agents, and blood agents. It discusses signs and steps handlers should take if they suspect their dog has been exposed to a chemical.[6] The vital signs of the dog should be taken and then the dog should be examined on the basis of abnormalities presented or the exposure route that is expected. An atropine dosage chart is provided that handlers can use if the dog has organophosphate toxicity.[6] The dog will continue to be monitored until its condition betters or worsens. For situations outside either the handler's or the veterinarian's knowledge, there are several poison control hotlines that can be contacted to render assistance for a fee.

Numerous poison control hotlines are available for people to call when their pet has ingested something toxic. Two examples of helplines are the ASPCA Animal Poison Control Center Hotline and the Pet Poison Helpline. The ASPCA hotline is staffed by 20 veterinarians, 8 of whom are board-certified in toxicology, and around 50 supporting staff of certified veterinary technicians and assistants (Dr. Tina Wismer, ASPCA, personal communication, 2015). The ASPCA Animal Poison Control Center hotline is available for anyone to call with a one-time consultation fee of $65.[8] Once the fee is paid, the ASPCA specialists will work with the caller to determine the best course of action. Each case is given a specific case number, which can be referred to at later times. The other main hotline is the Pet Poison Helpline. The Pet Poison Helpline is similar to the ASPCA hotline; there is a hotline number that can be called and a one-time fee of $49.[9] Both of these hotlines are available for both civilian and government calls. There is potential for wait time if the hotline is receiving a high call volume, which could delay treatment for government canines.

Protocols regarding who can legally treat animals also affect the ability of government canines to receive emergency care. On a state level, EMS in most states are restricted from providing emergency, prehospital care for animals owing to liability issues and lack of training. Currently, only 2 states have enacted legislation that allows EMS providers to provide prehospital intervention to pets. Colorado enacted senate bill 14-039 in August 2014, which "granted limited authority to EMS providers to voluntarily provide pre-veterinary care to domesticated animals."[10] The Colorado bill specifically states that it applies strictly to domesticated dogs and cats and that the provider must be trained and authorized by their employer to attend to domesticated dogs and cats. The EMS personnel's scope can be to provide immediate stabilization of the pet. The dog or cat may receive oxygen, fluids, medicine, or bandages from an EMS provider with the intent of the animal being taken to a veterinarian.[10] In Ohio, a bill effective August 2016 will "authorize specified emergency personnel to provide certain emergency medical services to an injured cat or dog."[11] Emergency personnel must be a first responder, emergency medical technician (EMT)-basic, EMT-intermediate, or EMT-paramedic. The intervention can be provided to a dog or cat prior to going to a veterinarian. The emergency personnel are allowed to maintain an airway, give oxygen, apply bandages, immobilize fractures, or give naloxone hydrochloride (Narcan; Adapt Pharma, Inc, Radnor, PA), if allowed by their medical director, to domesticated dogs or cats. The Ohio bill also protects the responders from any liability involved in treating a pet.[11] All other states without similar legislation have EMS personnel that are restricted from providing care owing to the possible legal ramifications of being charged with practicing veterinary medicine without a license.

RECOMMENDATIONS

The tabletop exercise Operation Canine Lifeline led to the development of 3 main recommendations for bettering the emergency care of government canines employed in the field. The recommendations are as follows:

- Develop a government-run veterinary toxicology hotline for the sole use of the government.
- Issue handlers deployment kits and preprogrammed smartphones that contain information on care practices for canines.
- Initiate an increased effort for civilian integration in the emergency care of government canines.

The first recommendation is for a government-run veterinary toxicology hotline to be made available for any government agency, 24/7. Government-trained veterinary toxicologists would staff the hotline in shifts. When called, veterinary toxicologists would connect with the handler and the veterinarian treating the canine in order to provide effective treatment in a timely manner. Having a hotline available for all departments in the government would standardize the care of government canines and ensure that all government canines have access to the same quality of care. This would allow the government to ensure that the knowledge base available is catered to all types of exposures that canines might have while working in the field, including toxins that family pets would rarely be exposed to but possible for a canine working in terrorism scenarios. While every agency that employs canines in the field has protocols for their care, both normative and emergent care, the variance in protocol across departments means that access to care may differ depending on department protocol. The establishment of a hotline for all government agencies to use would mean that every canine has access to the same elite level of expertise involving emergent care to toxic exposure.

In addition to the establishment of this hotline, it is recommended that government veterinary toxicologists gain field exposure to better assist them in understanding the scenarios in which the canines work. Inviting veterinary toxicologists,

who in the federal government are more research- and lab-focused, into the field would allow them to familiarize themselves with the handlers' environment and any additional stimuli they might be dealing with besides their canine (Sabrina McGraw, personal communication, 2015). If veterinary toxicologists are aware of other elements involved in the scenario of a sick canine, including other factors that the handler may be facing in the field, they will be able to provide better treatment advice for the situation.

Another important factor that makes the establishment of a government-run hotline a necessary recommendation is that a government-run hotline can give the government the ability to control information in a case regarding national security. The majority of government working dogs are working in high-profile transportation sector areas. If there is a major event, it will most likely involve some segment of the transportation sector and therefore be highly visible and high-profile. For those incidents that occur out of the public eye, it is important to have confidentiality and secrecy to prevent an escalation of the event through leaks and social media postings. The use of an outside hotline does not guarantee confidentiality and could lead to potential issues of national security.

The second recommendation is to provide all canine handlers with special canine deployment kits and preprogrammed smartphones. Issuing handlers deployment kits that contain additional medical equipment and supplies for the canine would allow the handler to provide treatment to the canine quickly if certain incidents occur. The deployment kits could contain equipment like oxygen masks, additional vials of certain drugs for the canine, or MARK-1 kits for the canine. Many antidotes for toxins that are available for humans, like MARK-1 kits, can be used on canines in altered dosages (Lori Gordon, personal communication, 2015). The quicker the kit is administered, the more likely the canine will survive.[12] MARK-1 kits may already be administered to handlers, but they are intended for human use only and handlers are not given extra for their canines (Lori Gordon, personal communication). Deployment kits with additional antidotes, like MARK-1 kits, intended for canine use only can increase the chance of canine survival in a life-threatening toxic exposure incident. Along with administering canine deployment kits to handlers, additional training should be given to handlers on the doses of medication that a canine would need and where on the canine the medication should be administered. This knowledge can aid handlers in administering care to the canine themselves, as well as in helping them explain to a trained medical professional where the treatment should be given.

The smartphones would be preprogrammed with medicine dose charts that are appropriate for the canine by weight. This would give the handler immediate access to knowledge about how much of a certain medicine is appropriate for the dog, since the amount of medication needed will vary depending on the size and weight of the canine. A few apps are available for purchase that contain canine dosage information for different medications.[13] In addition to having predownloaded medication dosage charts, smartphones provide handlers with the ability to use video applications like FaceTime (Apple Inc, Cupertino, CA) or Skype (Microsoft Corp, Redmond, WA). This would allow the veterinarian or veterinary toxicologist to see the canine in real time and have the handler perform diagnostic tests while the veterinarian or toxicologist observes. Video chat can help the veterinarian or veterinary toxicologist tailor and focus their treatment recommendations by being able to immediately see the canine instead of just hearing a description over the phone. Not all canines will exhibit obvious symptoms when they are exposed to a toxin. There are times when the canine is just not doing right (NDR), and having video capability allows the veterinarian to assess the neurological status of the canine, which can help them decide on a treatment path.

The final proposed recommendation is better civilian integration toward the treatment of government canines. Civilian integration is an essential step toward prolonging a canine's life in the field. In emergency situations, paramedics and EMTs are among the first to arrive on scene. Across the country, EMS professionals are trained to provide lifesaving, prehospital care to humans; there is no such prehospital care for animals. As discussed previously, only 2 states, Colorado and Ohio, have legislation granting EMS the ability to provide voluntary medical treatment to animals. During Operation Canine Lifeline, the discussion led to the potential use of local EMS to assist in the treatment of government canines in an emergency. Suggestions were to provide paramedics with continuing education courses on treating canines in the field, as well as to provide ambulances with charts containing drug dosage amounts and administration locations for canines.

As of 2015, there are no standardized prehospital trauma guidelines for veterinary medicine.[14] In their white paper, titled *Challenges Facing Prehospital Care for Operational K9s Injured in the Line of Duty*, the K9 Tactical Emergency Casualty Care (TECC) Working Group recommend the development of "evidence-based, best practice prehospital trauma guidelines for the Op-K9 injured in the high threat environment."[14] The TECC working group provided additional recommendations that involved the integration of local EMS in the care for government canines, including the recommendation for the American Veterinary Medical Association Model Veterinary Practice Act or state individual veterinary practice acts to outline provisions for non-veterinary paraprofessionals to provide lifesaving prehospital care for canines without the direct or indirect supervision of a licensed veterinarian. They reference Colorado SB 14-039 and encourage all states to create similar legislature. Following these recommendations, the TECC working group

http://dx.doi.org/10.1017/dmp.2016.171

addresses the lack of mechanism or funding available to establish an EMS agency specific for veterinary services. Their suggestion is for EMS agencies to draft a memorandum of understanding with their local veterinarian or veterinary treatment facilities to establish a partnership that can better provide emergency care for working dog. They recommend that the memorandums of understanding include various requirements, including a direct line of communication between EMS personnel and the veterinarian or veterinary treatment facilities and providing EMS with initial and annual refreshers training in canine first-responder care.[14]

Limitations

There are 2 forms of limitations in this paper: limitations to the recommendations made and limitations in the research and process of developing the recommendations. One limitation for the recommendations is the number of current federally employed veterinary toxicologists who could operate the hotline. The US Army currently has about 3 to 4 trained veterinary toxicologists. Acquiring more would require additional funding from the federal government to put more veterinarians through toxicology training (James Koterski, personal communication, 2015). In the short term, money is a possible issue when it comes to providing government veterinarians with toxicology training, as well as providing handlers with smartphones and additional antidotes for their dogs. All of these would cost the federal government more money initially, and it is recognized that it is hard to designate funds for things that already exist, like civilian poison control hotlines.

Another limitation for the recommendations is that it takes time to develop a database of symptoms and the toxins that cause them for the veterinary toxicologist to use when managing the hotline. Already established hotlines have years and years of providing treatment advice for dogs exposed to a dangerous substance, and they have built a database for themselves to reference if needed. Developing a new hotline would mean that the federal government would be starting from scratch in terms of a treatment database. It would take time to build up a database equivalent to those of preexisting hotlines. That being said, the recommendation for the government to develop their own hotline still has many advantages that would better assist the government in protecting their canine assets, such as their ability to research and build a treatment database that includes toxins not commonly encountered by civilian pets.

One limitation for the research in this article comes from the lack of resources from the federal government pertaining to protocol on this matter. While protocol was available from a few sources, both online and verbally during the Operation Canine Lifeline exercise, not all agencies that employ canines in the field have their protocols available for the public to see. Due to this, the recommendations presented here are based on the protocols that were obtained. Another limitation was that access to the number of government canines that are exposed to toxins while in the field was limited. From what was found, there is no database or protocol for the reporting of federal canines exposed to toxins in the field. Reports of 4 county police dogs were found on the Canine Officer Down Memorial Page website. The website is beginning the process of collecting data on canine line-of-duty deaths, but none of the canines on the website so far are federal dogs.

Another limitation for the research for this article was the lack of literature currently published on this topic. Although the TECC working group published 2 white papers on the topic of canine first response in 2015, in our research for additional sources we found many papers on actual medical treatments for canines but none on the methods or lack thereof for providing emergency prehospital treatments for canines. Because of this, the recommendations provided were based mostly on the Operation Canine Lifeline discussion, which included participation from various individuals who work in this field.

CONCLUSION

Operation Canine Lifeline was an exercise developed to examine the protocol for the emergency care of government canines exposed to toxins in the field. Three recommendations resulted from the exercise: (1) the creation of a government-run veterinary poison control hotline, (2) issuing handlers canine deployment kits and preprogrammed smartphones containing information on care practices for canines, and (3) an increased effort for civilian integration in the emergency care of canines. The recommendations developed in this exercise look to improve emergency response and prolong canine life.

These recommendations are important for the US government because they address issues in caring for canines in emergency situations and provide many benefits that could help the government in the long run. Although in the short term these recommendations require funding, the long-term benefits include protecting the government from losing an incredibly valuable asset. Civilian integration is a short-term recommendation that would be more easily obtainable, as it can occur on the state and local levels through legislation and memorandums of understanding that build partnerships between EMS and local veterinarians. Canines not only are valuable assets but also are viewed as members of their teams and key responders to emergency situations. The government provides their human employees with access to antidotes, vaccines, and other necessary tools to protect them in the field. As members of the team, the canines are entitled to speedy intervention and access to similar lifesaving medical care. These recommendations aid in the emergency care of

government canines and should be considered for implementation by the federal government.

About the Authors

Healthcare Emergency Management, Boston University School of Medicine, Boston, Massachusetts (Ms Corse, Ms Firth, Mr Burke); National Center for Disaster Medicine and Public Health, Rockville, Maryland (Dr Schor); CBRN Medical Countermeasures, Office of Health Affairs, Falls Church, Virginia (Dr Koterski); Medical Diagnostic and Chemical Branch, USAMRICD, Aberdeen Proving Ground, Maryland (Dr McGraw); Fort Belvoir Veterinary Treatment Facility, Fort Belvoir, Virginia (Dr Vincent-Johnson); Urban Search and Rescue MA TF-1, Beverly, Massachusetts (Dr Gordon).

Correspondence and reprint requests to Teija Corse, Department of Healthcare Emergency Management, Boston University School of Medicine, 650 Albany St, X-140, Boston, MA 02118 (e-mail: tkcorse@gmail.com).

REFERENCES

1. US Government Accountability Office. TSA Explosives Detection Canine Program. http://www.gao.gov/assets/660/651725.pdf. Published January 2013. Accessed July 26, 2015.
2. Grubb C, Burke T, Owen S. Using Canines to Address School Violence. Federal Bureau of Investigation website. https://leb.fbi.gov/2015/august/using-canines-to-address-school-violence. Published August 4, 2015. Accessed September 25, 2015.
3. K9. Officer Down Memorial Page website. https://www.odmp.org/k9. Accessed June 21, 2016.
4. Hensley N. Washington State drug dog dies after inhaling meth. New York Daily News website. http://www.nydailynews.com/news/crime/washington-state-drug-dog-dies-inhaling-meth-article-1.2163636. Accessed November 24, 2016.
5. K9 Morgan. Officer Down Memorial Page website. https://www.odmp.org/k9/1479-k9-morgan. Accessed April 29, 2015.
6. US Department of Agriculture. National Detector Dog Manual. https://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/detector_dog.pdf. Last Updated April 2012. Accessed February 3, 2015.
7. Department of the Air Force. USAF Military Working Dog Program Air Force Manual. http://static.e-publishing.af.mil/production/1/af_a4_7/publication/afman31-219/afman31-219.pdf. Certified current March 2013. Accessed July 28, 2015.
8. Animal Poison Control. American Society for the Prevention of Cruelty to Animals website. https://www.aspca.org/pet-care/animal-poison-control. Accessed February 3, 2015.
9. Who we are. Pet Poison Helpline website. http://www.petpoisonhelpline.com. Accessed June 24, 2015.
10. Senate Bill 14-039. Concerning a Grant of Limited Authority to Emergency Medical Service Providers to Voluntarily Provide Preveterinary Emergency Care to Certain Domesticated Animals. http://www.leg.state.co.us/clics/clics2014a/csl.nsf/fsbillcont/B3EC94E7F310DEB687257C3000061C8E?Open&file=039_enr.pdf. Accessed June 3, 2016.
11. Sub. H. B. No. 187. Emergency responders-stabilize injured animals. https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-187. Accessed June 3, 2016.
12. First Aid for EMS in Toxic Agent Exposure. http://www.nj.gov/health/ems/documents/Quick%20Recognition.pdf. Accessed October 7, 2015.
13. 20 Mobile apps for veterinarians. Vet Tech Colleges website. http://www.vettechcolleges.com/blog/20-apps-for-veterinarians. Accessed October q7, 2015.
14. K9 TECC Working Group Initiative. Challenges Facing Prehospital Care for Operational K9s Injured in the Line of Duty. Special Operations Medicine website. http://www.specialoperationsmedicine.org/Documents/K9%20Documents/Operational%20K9%20TECC%20Challenges%20White%20Paper%20Final%20dated%2029%20Sep%202015.pdf. Published 2015. Accessed June 3, 2016.