Use of Animals by NATO Countries in Military Medical Training Exercises: An International Survey

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ABSTRACT Among the 28 member nations of the North Atlantic Treaty Organization (NATO), a variety of training methodologies—including simulators, moulage scenarios, didactics and live animal laboratories—are used to prepare military medical personnel to treat injured civilians and soldiers. For ethical, educational, practical, and economic reasons, the necessity of animal use for this purpose has come into question. This article reports the results of a survey examining the prevalence of animal use in military medical training exercises among all NATO nations, finding that more than three-quarters of these countries do not use animals.

INTRODUCTION

Military medical personnel around the world are trained using combinations of didactics, computer simulations, manikins, task trainers, human patient simulators (HPS), moulage scenarios, and animal laboratories. However, growing public concern for animal welfare, advances in computerized medical simulation technology, educational considerations, and economic barriers have drawn a critical eye to animal use in military medical training (MMT).

In the United States, these developments have prompted the Department of Defense (DoD) to end a number of animal laboratories, including the use of dogs in military ballistic wound management training and[1] more recently cease the use of vervet monkeys in chemical casualty management exercises.[2] Some military installations have independently replaced other animal uses with simulators as well, such as for pediatric intubation training. (Naval Medical Center-San Diego 2011; William Beaumont Army Medical Center, 2011; Naval Medical Center Portsmouth, 2012)

The DoD has convened committees and funded external organizations to examine ways to reduce and replace animal use in MMT, which in fiscal year 2008 comprised 7,500 animals from eight different species,[3] the majority (5,931) of whom were used for trauma training exercises by U.S. Special Operations Command and the U.S. Army Medical Department Center and School and the remainder of these animals were used for graduate and continuing medical education.[4] These numbers do not include animals used for MMT conducted by private contractors. Federal legislation has been introduced to phase out animal use in combat trauma training, the most animal-intensive and invasive MMT exercise, in favor of simulation and other nonanimal methods.[5]

Internationally, German authorities' repeated rulings that U.S. Army Europe (USAREUR) and private military contractors may not use animals in MMT because effective nonanimal training methods exist have prompted USAREUR to now conduct predeployment trauma training in Germany using only nonanimal simulation methods.[6,7]

To determine how animal use in the U.S. military aligns with international standards and practices, this study investigated the status of animal use in MMT programs among all 28 NATO nations.

METHODS

From June 2010 through December 2011, PETA U.S. and its international affiliates sent e-mail surveys to defense officials in NATO nations and/or their U.S.-based embassies. The survey stated, "We are surveying NATO countries to learn whether or not they use animals in military and/or special operations forces (SOF) medical training exercises. . . . Can you please let us know if [name of NATO country] uses animals in its military and/or SOF medical training exercises?" The survey response rate was 100%.

RESULTS

Officials from 22 NATO countries (78.6%)—including Albania, Belgium, Bulgaria, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, and Turkey—confirmed they do not use animals in MMT exercises, citing various reasons including legal prohibitions against animal use and availability of simulation technology.

Six NATO countries (21.4%)—Canada, Denmark, Norway, Poland, the Unites States, and the United Kingdom (which sends medical personnel to participate in Denmark's animal laboratories)—reported that their MMT programs do use animals, primarily pigs and goats, for training in the surgical management of trauma including difficult airways, penetrating

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TABLE I. NATO Countries' Responses to Survey Concerning Use of Animals in MMT

NATO Country	Survey Response
Countries That Do Not Use Animals	
Albania	"[W]e can say that actually Ministry of Defense do not use animals at military service. And also in the near future, we do not expect to use animals, or to organize exercises on that [medical training] issue." (Albanian Ministry of Defence, 2011)
Belgium	"The Belgian Ministry of Defence doesn't use animals in its military training exercises neither in SOF [special operations forces] medical training exercises." (Belgian Defence, 2011)
Bulgaria	"[W]e don't use animals in military or Special Forces operation medical training exercises." (Bulgarian Ministry of Defence, 2011)
Croatia	"Regarding your question [w]e inform you that Croatian Ministry of Defence does not use the animals for those [military medical training] purposes." (Ministry of Defence of the Republic of Croatia, 2011)
Czech Republic	"[R]regarding your question on animal use in military and/or special operation forces medical training exercises we can clearly state, that the Armed Forces of the Czech Republic do not use any animals for such purposes." (Czech Republic Ministry of Defence, 2011)
Estonia	"Estonian Defence Forces do not use animals for medical training exercises." (Estonian Defence Forces HQ, 2011)
France	"French Army doesn't use animal in medical training exerci[s]es." (French Land Forces, 2011)
Germany	"[T]he armed forces do no animal tests for training purposes. For training exercises the soldiers learn with really good models and the doctors don't need animal experiments." (German Armed Forces, 2010) [Translated.]
Greece	"[I]n our country we don't use animals in military medical training exercises." (Hellenic National Defense General Staff, 2011)
Hungary	"[T]he Ministry of Defence of the Hungarian Republic does not use animals in any military or SOF [special operations forces] medical training exercises." (Ministry of Defence of the Hungarian Republic, 2011)
Iceland	"The Icelandic Coast Guard does not use animals in any exercises. Neither does the part of the Icelandic Coast Guard which used to be the Icelandic Defence Force." (Icelandic Coast Guard, 2011)
Italy	"I can confirm you that Italian Ministry of Defence observe our law n. 189/2005, prohibiting any activity that could determine ill-treatment of animals." (Embassy of Italy in Washington, DC, 2011)
Latvia	"Latvian National Armed Forces DO NOT use animals in military and/or special operations forces (SOF) medical training exercises." (Ministry of Defence of Latvia, 2011) [Emphasis in original.]
Lithuania	"Please be informed that in the Lithuanian . . . Armed Forces there are two dogs used by the Military Police. The military dogs are not used in military and/or medical training exercises." (Lithuanian Ministry of National Defence, 2011)
Luxembourg	"Luxembourg Ministry of Foreign Affairs and Defence does not use animals in its military for medical training exercises." (Luxembourg Ministry of Foreign Affairs and Defence, 2011)
The Netherlands	"[T]he Netherlands Ministry of Defence is not using live animals in its military and/or SOF medical training exercises, nor are any animals killed for this purpose." (The Netherlands Ministry of Defence, 2011)
Portugal	"I'm in condition to inform you in advance that Portugal does not use animals in military and/or special operations forces medical training exercises." (Embassy of Portugal in Washington, DC, 2011)
Romania	"[T]he Romanian Ministry of National Defence (MoND) does not use animals in medical training exercises in neither military nor SOF. MoND's rules only allow the use of human-based methods (human patient simulators) for training members of the Armed Forces in the treatment of severe injur[i]es." (Romanian Ministry of National Defence, 2011)
Slovakia	"SAF [Slovak Armed Forces] or MP [Military Police] are not using any animals for medical traini[n]g exercise." (Ministry of Defence of the Slovak Republic, 2011)
Slovenia	"[T]hank you for your inquiry regarding the use of animals by the Slovenian Armed Forces in military and/or special operations forces medical training exercises. We inform you that the Slovenian Armed Forces do not use animals for the abovementioned purposes." (Slovenia n Armed Forces, 2011)
Spain	"[T]he Spanish Ministry of Defense doesn't use animals in military and/or special operations forces (SOF) medical training exercises." (Spanish Ministry of Defense, 2011)
Turkey	"Neither the Turkish Armed Forces nor The Turkish Ministry of National Defense uses animals in military or special operations forces medical training exercises. Highly sophisticated medical dummies and associated medical equipment are used for these purposes." (Embassy of Turkey in Washington DC, 2011)
Countries That Use Animals	
Canada	"I can confirm that as a member of the Canadian Council on Animal Care (CCAC) which establishes the national norms on the use of vertebrates in research, teaching, and testing, DND does, when no other scientifically valid alternative exists, use animals in defence research/training activities." (Defence R&D Canada, 2011)
Denmark	"[T]he Danish Armed Forces Health Service uses pigs as a human model training personnel handling trauma." (Danish Armed Forces Health Service, 2011)
Norway	"The Norwegian Armed Forces Medical Services use animals for the purpose of surgical skills training of Surgeons, both as part of specific training of military employed [personnel] but also as a provider of parts of the compulsory surgical training for the surgical specialisation authorised by the Norwegian Ministry of Health and Care Services." (Norwegian Royal Ministry of Defence, 2011)
Poland	"[A]nimals were used during the process of preparing medical staff for service within Polish Military Contingent." (Polish Ministry of National Defence, 2011)
United Kingdom	"In assessing the need to continue with live-animal trauma training . . . . it is considered that, by participating in the Danish training exercises rather than seeking to replicate these in the UK, we are minimizing to the maximum extent possible the overall number of animals used." (U.K. MoD, 2011)
United States	"The answer to your question, '[does] the U.S. DoD uses [sic] animals in its military and/or special operations forces (SOF) medical training exercises,' is yes." (U.S. DoD, 2011)

injuries, gunshot wounds, and amputation hemorrhaging (Table I).[8–11] The U.S. DoD also uses rabbits for chest tube insertion and eye surgery practice and rats for microsurgery exercises,[12] as well as ferrets for intubation training. (U.S. Air Force Surgeon General, 2012) The Canadian Department of National Defence also uses pigs in live agent chemical casualty management exercises.[13]

DISCUSSION

Although animal use in MMT continues in some NATO countries, the overwhelming majority avoid this practice, which illustrates alternatives to the use of animals are available and that animal use is not essential for MMT.

The Budapest, Hungary-based NATO Centre of Excellence for Military Medicine (MILMED COE), designated as the primary source of expertise for the NATO Alliance's medical community charged with training medics and experts to plan medical support for NATO operations, has confirmed that its Emergency Management of Battlefield Injuries course (EMBI) and its Major Incident Medical Management and Support (MIMMS) course do not use animals, writing, "MILMED COE does not use animals, alive or dead, or animal models for any training or course or is involved in any partner course doing so. Where needed for specific training (EMBI; MIMMS) appropriate HPS are used." (NATO Centre of Excellence for Military Medicine, 2011)

Even within the United States, some facilities meet MMT objectives using exclusively nonanimal methods (Navy Trauma Training Center, 2008; U.S. Air Force Expeditionary Medical Skills Institute's Center for Sustainment of Trauma and Readiness Skills, 2008) U.S. Army Executive Order 096-09 also allows omission of animal use in trauma training at international installations in order to comply with host nation laws.

U.S. Government officials defend animal use in MMT as appropriate and necessary;[14] however, pedagogical advantages of alternative methods, such as high-fidelity HPS and partial task trainers, over animal use for procedures taught in MMT have been discussed in the literature.[15–17] Substantial research has also objectively compared emergency medical skill proficiency of trainees taught using animals versus those trained using nonanimal alternatives, with the latter consistently outperforming.

Studies of the widely used TraumaMan task trainer made by Simulab Corporation (1600 West Armory Way, Seattle, Washington, DC; www.simulab.com) have found that the surgical trauma skills of people trained using the simulator were superior to those trained using animals.[18,19] A Keesler Air Force Base study also found small, but not statistically significant, differences between the surgical trauma skills of those trained on pigs versus those trained on TraumaMan.[20] Virtual reality and human cadaver laboratories have also been shown to better prepare trainees to perform surgical trauma procedures than animal-based training.[21,22] A study of military medical personnel in the Canadian Forces compared various trauma training modalities and no significant difference was found between the animal laboratory and the human patient simulator, with study participants rating both as being "very valuable."[23]

CONCLUSION

In the few NATO countries that continue to use animals in MMT, federal laws and/or policies require the use of nonanimal alternatives in training and testing when available. In these nations, further scrutiny is needed by military leadership and civilian policymakers to determine what opportunities exist to replace animal use with other methods.

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