

USDA, APHIS, Animal Care



ANIMAL WELFARE COMPLAINT

Complaint No.	Date Entered	Receiv	Received By		
AC17-821	22-Sep-17	R.Smi	R.Smith		
Referred To		Reply I	Reply Due		
Magid/Brunkhorst		22-Se	p-17		
Facility or Person	Complaint Filed	d Against			
Name		Custon	Customer/License/Registration No.		
The University of Tennessee		43010	43010/63-R-0126		
Chattanooga					
Address					
615 McCallie Ave.	109 Race Hall De	pt 4915			
City	State	Zip	Phone No		
Chattanooga	TN	37403	(423) 425-5867		
Complainant					
Name		Organizati	on		
(b) (6), (b) (7)(C), (b) (7)(D)		(b) (6), (b)	(6), (b) (7)(C), (b) (7)(D)		
Address					
Citv	State	Zip	Phone No./Email address		
- ,			(b) (6), (b) (7)(C), (b) (7)(D)		
How was complaint rece	vived?				

Details of Complaint: SEE ATTACHED

Results: A routine facility and records inspection was conducted on 10/12/17. The complainant lists five specific complaints. I'll address each seperately: 1. Justification of Animal Use is Subjective and Insufficient Beacause Alternatives Exist: The written protocol includes a written narrative that describes the alternative search conducted by the principal investigator to determine and consider the alternatives to procedures that may cause more than momentary or slight pain or distress to any animal. The IACUC meeting minutes state that the IACUC has reviewed and approved the protocol as written including the alterative search and considerations. 2. The Use of Animals for Emergency Medicine Training is Not Unavoidable: The complaint references 9CFR2.31(e) (4).

This regulation requires that the proposal to conduct an activity involving animals must contain a description of procedures designed to assure that discomfort and pain to animals will be limited to that which is unavoidable. The approved protocol includes information about all anesthetic and euthanasia drugs/dosages to be used (all are standard drugs/dosages used in pigs). The protocol states that all procedures conducted are terminal surgery procedures with euthanasia conducted under the pig is still under anesthestia. 3. The Use of Animals for Advanced Trauma Life Support Training is Not Unavoidable. This facility does not conduct Advanced Trauma Life Support Training using live animals. The facility has available and uses simulators such as TraumaMan. 4. The Use of Small Animals for Pediatrics Training is Not Unavoidable: This facility does not conducted PALS courses using live animals. The facility has available and uses mannakins. 5. The University of Tennessee College of Medicine Chattanooga IACUC is Failing to Properly Oversee Animal Use: The IACUC holds regularly scheduled committee meetings as required by the AWA (quorum maintained). All protocol review is completed by full committee review of protocols (done yearly). The meeting minutes state that the IACUC has reviewed the protocol including the alternative search/narrative and approved the protocol via a vote. Application packet provided? Yes \square No \boxtimes

INSPECTOR	DATE
Ssuanne Brunkhorst	27-Oct-17
REVIEWED BY	DATE

Smith, RaNeshia - APHIS

From:	ACEAST		
Sent:	Thursday, September 21, 2017 4:43 PM		
То:	Smith, RaNeshia - APHIS		
Subject:	FW: APHIS complaint v. University of Tennessee COM Chattanooga		
Attachments:	2017-09-21 (UTCOMC APHIS Complaint).pdf; ADD I - Emergency Medicine Survey		
	Results Updated 2017-09-19.pdf; ADD II - Emergency Medicine Training References and		
	Reviews.pdf; ADD III - Letter from AHA Chair re PALS 2009-02-03.pdf; ADD IV - Key		
	Simulation Devices for EM Training 2017-07-10.pdf; ADD V - ATLS Program Survey		
	Results Updated 2017-09-11.pdf; ADD VI - Pediatrics Residency Survey Results Updated		
	2017-09-19.pdf		

Hi RaNeshia,

Please process the attached complaint.

Thanks,

Teany D. Gerkin Program Support Specialist Eastern Region USDA/APHIS/Animal Care 920 Main Campus Drive, Suite 200 Raleigh, NC 27606 919-855-7116 (Work) 919-855-7123 (fax) TEANY.D.GERKIN@APHIS.USDA.GOV

Join the Animal Care Stakeholder Registry and receive emails on topics of interest

From: Nowakowski, Craig A - APHIS Sent: Thursday, September 21, 2017 9:57 AM To: ACEAST <ACEAST@aphis.usda.gov> Subject: FW: APHIS complaint v. University of Tennessee COM Chattanooga

Very Respectfully,





2150 Centre Avenue Building B, Mailstop 3W11, Fort Collins, CO 80526-8117 II Office: (970)494-7320 Cell: (301)456-4886 II FAX: (970)494-7461 II <u>Craig.A.Nowakowski@aphis.usda.gov</u> II <u>USDA APHIS</u> | Animal Care

"The greatness of a nation and its moral progress can be judged by the way its animals are treated." - Mahatma Gandhi

From: Goldentyer, Betty J - APHIS Sent: Thursday, September 21, 2017 7:51 AM To: Nowakowski, Craig A - APHIS <<u>Craig.A.Nowakowski@aphis.usda.gov</u>> Subject: FW: APHIS complaint v. University of Tennessee COM Chattanooga

A complaint.

Thanks

From: (b) (6), (b) (7)(C), (b) (7)(D)

Sent: Thursday, September 21, 2017 8:38 AM To: Goldentyer, Betty J - APHIS <<u>Betty J.Goldentyer@aphis.usda.gov</u>> Subject: APHIS complaint v. University of Tennessee COM Chattanooga

Sept. 21, 2017

Elizabeth Goldentyer, D.V.M. Regional Director USDA/APHIS/AC Eastern Region 920 Main Campus Drive, Suite 200 Raleigh, NC 27606

Dear Dr. Goldentyer:

The first attachment (and pasted below) is a complaint by the (b) (6), (b) (7)(C), (b) (7)(D)

b) (6), (b) (7)(C), (b) (7)(D) regarding what we believe to be violations of the Animal Welfare Act at the University of Tennessee College of Medicine in Chattanooga. The several other attachments are supporting documents referenced in the complaint.

Your action in response to this complaint is greatly appreciated. Please contact me with any questions.

Sincerely,



Sept. 21, 2017

Elizabeth Goldentyer, D.V.M.

20-00856_000004

Regional Director USDA/APHIS/AC Eastern Region 920 Main Campus Drive, Suite 200 Raleigh, NC 27606

Submitted by e-mail (betty.j.goldentyer@aphis.usda.gov)

Re: Use of Live Animals for Medical Training at the University of Tennessee College of Medicine in Chattanooga

Dear Dr. Goldentyer:

The (b) (6), (b) (7)(C), (b) (7)(D) requests that the Animal and Plant Health Inspection Service (APHIS) investigate the use of live animals for training at the University of Tennessee College of Medicine (UTCOM) in Chattanooga.

This complaint focuses on three areas of medical training in which the use of animals is far outside the norm of current educational standards and for which nonanimal training methods are widely available:

Emergency Medicine Resident Training: Future physicians are told to make incisions into an animal's throat and chest to insert tubes, cut into veins, and insert needles into the chest. Today, 91 percent of surveyed emergency residency programs in the United States and Canada (174 of 192)—including prominent regional programs at Duke University, Wake Forest University, Emory University, the University of Alabama-Birmingham, and the other UTCOM campuses—use human-based methods instead of live animals.

Advanced Trauma Life Support (ATLS): Trainees are instructed to make incisions into an animal's throat and chest to insert needles and tubes, and to perform various other procedures. Across the United States and Canada, 99 percent of the more than 300 ATLS courses use only human-based training methods.

Pediatric Advanced Life Support (PALS): During this training course, breathing tubes are forced down the throats of small animals. The American Heart Association (AHA), which accredits PALS courses, has stated that it "does not endorse the use of live animals for PALS training."

Under the Animal Welfare Act, UTCOM Chattanooga meets the statutory definition of a "research facility" and is therefore required to comply with the Animal Welfare Act (AWA). As part of this required compliance, any use of live animals for research, testing, or training must be approved by the university's Institutional Animal Care and Use Committee (IACUC). UTCOM Chattanooga is registered with the U.S. Department of Agriculture under certificate number 63-R-0001.

The (b) (6), (b) (7)(C), (b) (7)(D) believes that inadequate oversight by the university's IACUC is responsible for the approval and use of live animals in its emergency medicine residency program. The specific regulatory violations are:

1. Justification of Animal Use is Subjective and Insufficient Because Alternatives Exist

Section 2143 of the Animal Welfare Act and CFR Title 9, Section 2.31(d)(1)(i, ii) of the Animal Welfare Act's implementing regulations require that the principal investigator (PI)—including course instructors—consider alternatives to procedures that may cause more than momentary or slight pain or distress to any animal used for research or educational purposes.

In addition, the PI must provide a written narrative description of the methods and sources used to determine that alternatives were not available. The content of this narrative is detailed in the APHIS *Animal Care Policy Manual* (2011), which states in Policy 12: "If a database search or other source identifies a bona fide alternative method (one that could be used to accomplish the goals of the animal use proposal), the IACUC may and should ask the PI to explain why an alternative that had been found was not used."

We believe that the PI did not meet this requirement because justification of animal use for emergency medicine residency, ATLS, and PALS training is not possible in view of the validation and widespread implementation of purpose-designed nonanimal training methods. Having not provided objective evidence to support animal use in view of numerous acknowledged validated and implemented alternatives, this requirement of the AWA was not met.

A proper alternatives search would have revealed nonanimal methods for the training of emergency procedures currently taught at UTCOM Chattanooga using live animals. All emergency medicine procedural skills, including cricothyroidotomy, pericardiocentesis, chest tube placement, diagnostic peritoneal lavage, and intubation, can be taught using human-based medical simulation, partial task trainers, and cadavers.

Over the last 13 years, animal use among surveyed emergency medicine residency programs has declined from 86 percent (Custalow 2004, published survey) to fewer than ten percent (18 of 192) of surveyed programs; see Addendum I. With advances in technology, as well as ethical considerations, there has been a shift in paradigm, and a large majority of programs are now exclusively employing nonanimal training methods. For a summary of recent peer-reviewed publications and reviews pertaining to emergency medicine training methodologies, see Addendum II.

In addition, U.S. Air Force Maj. Andrew Hall, M.D., found in 2014 that post-training self-efficacy scores demonstrated no statistical difference between live animal and simulator training methods for chest tube placement, cricothyroidotomy, and diagnostic peritoneal lavage.(1) In a letter to the editor published in *Military Medicine* in the same year, Maj. Hall concluded: "We have entered into an age where artificial simulator models are at least equivalent to, if not superior to, animal models."(2)

In 2009, the AHA stated that—in addition to not endorsing animal use for PALS training—it also "recommends that any hands-on intubation training for the AHA PALS course be performed on lifelike human manikins" (see Addendum III).

A validated and widely implemented example of these human-based methods is Simulab's TraumaMan System, a realistic anatomical human body simulator with lifelike skin, subcutaneous fat, and muscle. The TraumaMan System can be used to replace the use of live animals for numerous procedures, including cricothyroidotomy, pericardiocentesis, chest tube placement, diagnostic peritoneal lavage, and intravenous cutdown. In fact, the American College of Surgeons, which developed and accredits ATLS courses, has stated that "whenever feasible, alternatives to the use of live animals should be developed and employed" and has endorsed the use of TraumaMan to teach ATLS courses. In addition, after careful review, the Department of Defense ended animal use for ATLS training in 2015, stating that "sufficient simulation models [are] available to meet medical education and training needs."(3)

Further, there are many other simulators that are used in emergency medicine residency training. Laerdal's SimMan 3G is an advanced patient simulator that can be used to teach cricothyroidotomy, chest tube placement. needle thoracostomy, and intraosseous catheter placement. For pediatrics training, Gaumard's Super Tory, CAE Healthcare's BabySIM, and Laerdal's SimNewB are all infant-sized mannequins that can be used to teach intubation. In Addendum IV, you will find a sampling of key training devices available to replace animal use for medical training at UTCOM Chattanooga.

2. The Use of Animals for Emergency Medicine Training is Not "Unavoidable"

The Animal Welfare Act also requires that activities involving animals be designed to "assure that discomfort and pain to animals will be limited to that which is unavoidable for the conduct of scientifically valuable research." 9 C.F.R. 2.31(e)(4).

We believe that this requirement was not met by the PI because of the widespread availability of validated simulators and the fact that 91 percent of surveyed emergency medicine programs in the United States and Canada do not use animals. This clearly documents that such use of live animals is not "unavoidable."

3. The Use of Animals for Advanced Trauma Life Support Training is Not "Unavoidable"

The Animal Welfare Act also requires that activities involving animals be designed to "assure that discomfort and pain to animals will be limited to that which is unavoidable for the conduct of scientifically valuable research." 9 C.F.R. § 2.31(e)(4).

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We believe that this requirement was not met by the PI because of the widespread availability of validated simulators and the fact that 99 percent of surveyed ATLS programs in the United States and Canada do not use animals (see Addendum V). This clearly documents that such use of live animals is not "unavoidable."

4. The Use of Small Animals for Pediatrics Training is Not "Unavoidable"

The Animal Welfare Act also requires that activities involving animals be designed to "assure that discomfort and pain to animals will be limited to that which is unavoidable for the conduct of scientifically valuable research." 9 C.F.R. 2.31(e)(4).

We believe that this requirement was not met by the PI because of the widespread availability of validated simulators and the fact that American Heart Association (AHA), which accredits PALS courses, has stated that it "does not endorse the use of live animals for PALS training," and that "the use of lifelike training manikins for PALS courses is the standard accepted norm." In addition, 99 percent of surveyed pediatrics residency programs in the United States and Canada (222 of 223) teach intubation and other procedures without using live animals for training (see Addendum VI). This clearly documents that such use of live animals is not "unavoidable."

5. The University of Tennessee College of Medicine Chattanooga IACUC is Failing to Properly Oversee Animal Use

Section 2143 of the Animal Welfare Act and Title 9, Section 2.31(d)(1)(i, ii) of the Animal Welfare Act's implementing regulations require that the IACUC enforce the requirements described in items 1-4 above and thereby determine that the proposed activities are in accordance with the Animal Welfare Act and CFR Title 9, Section 2.31(d).

Further, the APHIS Animal Care Policy Manual (2011) Policy 12 places the burden of alternatives justification on the IACUC as well as the PI by stating: "The IACUC, in fact, can withhold approval of the study proposal if the Committee is not satisfied with the procedures the principal investigator plans to use in his study."

We believe that these requirements were not met by the UTCOM Chattanooga IACUC because the animal use protocol was approved despite the violations described in items 1-4 above. Thus, the b) (6), (b) (7)(C), (b) (7)(D) alleges inadequate institutional oversight by the UTCOM Chattanooga IACUC.

Accordingly, the (b) (6), (b) (7)(C), (b) (7)(D) requests that APHIS investigate this matter to find the University of Tennessee College of Medicine Chattanooga and its IACUC in violation of the Animal Welfare Act and its implementing regulations as detailed above, and to implement correction and appropriate penalties.

Thank you for your attention.

Sincerely, (b) (6), (b) (7)(C) (b) (6), (b) (7)(C)

References

1 Hall A., Riojas R., Sharon D. Comparison of self-efficacy and its improvement after artificial simulator or live animal model emergency procedure training. *Military Medicine*. 2014; 179(3):320-3. 2 Hall A. Letter to the Editor. *Military Medicine*. 2014; 179(7):697.

3 Woodson J. "Determination for the use of Animals in Medical Education and Training." 15 May 2014.

Addendums

I. Animal Use in Allopathic and Osteopathic Emergency Medicine Residency Programs in the United States: An Ongoing Survey

II. Emergency Medicine Training References: Research and Reviews

III. Letter from the Chair of the AHA Emergency Cardiovascular Care Committee: February 3, 2009.

IV. Simulation for Emergency Medicine Residency Training: A Sampling of Key Devices

V. Live Animals Use for Advanced Trauma Life Support Programs in the United States and Canada: An Ongoing Survey

VI. Animal Use in Pediatrics Residency Programs in the United States and Canada: An Ongoing Survey



Sept. 21, 2017

Elizabeth Goldentyer, D.V.M. Regional Director USDA/APHIS/AC Eastern Region 920 Main Campus Drive, Suite 200 Raleigh, NC 27606

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Over the last 13 years, animal use among surveyed emergency medicine residency programs has declined from 86 percent (Custalow 2004, published survey) to fewer than ten percent (18 of 192) of surveyed programs; see Addendum I. With advances in technology, as well as ethical considerations, there has been a shift in paradigm, and a large majority of programs are now exclusively employing nonanimal training methods. For a summary of recent peer-reviewed publications and reviews pertaining to emergency medicine training methodologies, see Addendum II.

In addition, U.S. Air Force Maj. Andrew Hall, M.D., found in 2014 that post-training selfefficacy scores demonstrated no statistical difference between live animal and simulator training methods for chest tube placement, cricothyroidotomy, and diagnostic peritoneal lavage.¹ In a letter to the editor published in *Military Medicine* in the same year, Maj. Hall concluded: "We have entered into an age where artificial simulator models are at least equivalent to, if not superior to, animal models."²

In 2009, the AHA stated that—in addition to not endorsing animal use for PALS training—it also "recommends that any hands-on intubation training for the AHA PALS course be performed on lifelike human manikins" (see Addendum III).

A validated and widely implemented example of these human-based methods is Simulab's TraumaMan System, a realistic anatomical human body simulator with lifelike skin, subcutaneous fat, and muscle. The TraumaMan System can be used to replace the use of live animals for numerous procedures, including cricothyroidotomy, pericardiocentesis, chest tube placement, needle decompression, diagnostic peritoneal lavage, and intravenous cutdown. In fact, the American College of Surgeons, which developed and accredits ATLS courses, has stated that "whenever feasible, alternatives to the use of live animals should be developed and employed" and has endorsed the use of TraumaMan to teach ATLS courses. In addition, after careful review, the Department of Defense ended animal use for ATLS training in 2015, stating that "sufficient simulation models [are] available to meet medical education and training needs."³

Further, there are many other simulators that are used in emergency medicine residency training. Laerdal's SimMan 3G is an advanced patient simulator that can be used to teach cricothyroidotomy, chest tube placement, needle thoracostomy, and intraosseous catheter placement. For pediatrics training, Gaumard's Super Tory, CAE Healthcare's BabySIM, and Laerdal's SimNewB are all infant-sized mannequins that can be used to teach intubation. In Addendum IV, you will find a sampling of key training devices available to replace animal use for medical training at UTCOM Chattanooga.

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3. The Use of Animals for Advanced Trauma Life Support Training is Not "Unavoidable"

¹ Hall A., Riojas R., Sharon D. Comparison of self-efficacy and its improvement after artificial simulator or live animal model emergency procedure training. *Military Medicine*. 2014; 179(3):320-3.

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We believe that this requirement was not met by the PI because of the widespread availability of validated simulators and the fact that American Heart Association (AHA), which accredits PALS courses, has stated that it "does not endorse the use of live animals for PALS training," and that "the use of lifelike training manikins for PALS courses is the standard accepted norm." In addition, 99 percent of surveyed pediatrics residency programs in the United States and Canada (222 of 223) teach intubation and other procedures without using live animals for training (see Addendum VI). This clearly documents that such use of live animals is not "unavoidable."

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Accordingly, the (b) (6). (b) (7)(C). (b) (7)(D) requests that APHIS investigate this matter to find the University of Tennessee College of Medicine Chattanooga and its IACUC in violation of the Animal Welfare Act and its implementing regulations as detailed above, and to implement correction and appropriate penalties.

Thank you for your attention.



Addendums

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- VI. Animal Use in Pediatrics Residency Programs in the United States and Canada: An Ongoing Survey

Emergency Medicine Training References: Research and Reviews

Updated: March 9, 2016

Listed in reverse chronological order. Restricted to emergency procedural training in peer-reviewed publications since 2011 and emergency medicine training reviews since 2008. Comparative studies of simulation and animal use are labeled (C).

Iverson K, Riojas R, Sharon D, Hall AB. Objective comparison of animal training versus artificial simulation for initial cricothyroidotomy training. *The American Surgeon* 2015;81:515-518. (C)

69 U.S. Air Force volunteer airmen received cricothyroidotomy "training to proficiency" using either dead pigs (36) or TraumaMan (33). Two weeks later all trainees were tested for retained proficiency using human cadavers. Endpoints were time to completion, incision size, incision start location, initial placement attempt, and final accuracy. "There was no statistically significant, objective difference in any metric between animal- and simulator-trained groups after cricothyroidotomy training. For initial training, there is no objective benefit of animal training."

Hall AB, Riojas R, Sharon D. Comparison of self-efficacy and its improvement after artificial simulator or live animal model emergency procedure training. *Military Medicine* 2014;179(3):320-323. (C)

111 U.S. Air Force volunteer airmen received emergency procedures training using either live pigs (78) or TraumaMan (33). Procedures trained were cricothyroidotomy, diagnostic peritoneal lavage, and thoracostomy (chest tube placement). All participants then rated their self-efficacy using a standardized ten-point scale. "[P]ost-training self-efficacy scores were not statistically different between live animal and artificial simulator training for diagnostic peritoneal lavage (p = 0.555), chest tube (p = 0.486), and cricothyroidotomy (p = 0.329). We conclude that artificial simulator and live animal training produce equivalent levels of self-efficacy after initial training."

Sweet R. Comparing live animal and simulator alternatives for training and assessing hemorrhage and airway procedures in a tactical field situation. *Military Health System Research Symposium*, Ft. Lauderdale, FL, August 18-21, 2014. (C)

Department of Defense-sponsored study at University of Minnesota compared combat medic performance after training using live animals or simulation for hemorrhage control and emergency airway management. There were no significant differences between animal use and simulation regarding procedural proficiency or degrees of participant stress related to the training.

Lee MO, Brown LL, Bender J, Machan JT, Overly FL. A medical simulation-based educational intervention for emergency medicine residents in neonatal resuscitation. *Academic Emergency Medicine* 2012;19:577-585.

27 emergency medicine residents (PG2-PG4) at Rhode Island Hospital were trained in neonatal resuscitation, either using usual curriculum components (15) or using usual curricular components plus simulation-based neonatal resuscitation training (12) using the SimNewB simulator programmed with critically ill parameters. Simulation procedures included CPR, intubation, umbilical vein cannulation, and

intraosseous access. The simulation group (+11.8), but not the control group (-0.5), improved on the standard Neonatal Resuscitation Program performance assessment score after training. The authors concluded: "Our simulation-based educational intervention significantly improved EM residents' knowledge and performance of the critical initial steps in neonatal resuscitation."

Kharasch M, Aitchison P, Pettineo C, Pettineo L, Wang EE. Physiological stress responses of emergency medicine residents during an immersive medical simulation scenario. *Disease-A-Month* 2011;57:700-705.

12 emergency medicine residents volunteered to undergo training using the METI Emergency Care Simulator, with pre-training and intra-training measurement of heart rate and blood pressure. The stress of evaluation pressure was eliminated by assuring participants that the study was voluntary and had no influence on their residency evaluation or grades. The programmed training scenario included sequential "patient" deterioration requiring recognition and treatment of lethal cardiac dysrhythmias and airway emergencies. Heart rate and blood pressure were measured at regular intervals during the scenarios. All participants had significant increases in heart rate (mean 42 bpm; range 21-72 bpm) and blood pressure (mean 23 mm; range not reported). One participant was stopped because of concern when heart rate reached 170 bpm.

The authors concluded: "These findings suggest that treating a patient simulator can indeed be similar to treating a real critically ill patient. Physiological arousal suggests that the residents developed a sense of urgency and responsibility for managing the simulated patient" and "We were able to demonstrate that residents adequately 'suspended disbelief' and performed 'as if' it were real." Comparing this result to learning during actual patient encounters, the authors stated that "a trainee can learn to harness their own stress response without placing patients' lives at risk."

Hall AB. Randomized objective comparison of live tissue training versus simulators for emergency procedures. *The American Surgeon* 2011;77(5):561-565. (C)

24 U.S. Air Force volunteer airmen without previous medical training participated in a randomized comparison of tube thoracostomy and cricothyroidotomy (12 using pigs; 12 using TraumaMan). One week after training, performance was measured (completion time, incision size, correct location, and success rate) using human cadavers. "There was no statistically significant difference in chest tube and cricothyroidotomy outcomes or confidence in the groups trained with live animal models or simulators at the 95 per cent confidence interval."

Reviews and opinion statements supporting the equivalence or superiority of simulation compared to animal use for emergency procedure training.

The listed articles describe the benefits of simulation compared to animal use regarding anatomical accuracy, training-related stress and emotional responses, functional v. physical fidelity, comparative skills for emergency procedures, objective evaluation of trainees, identification of performance gaps, and other areas essential for emergency medicine training. Often noted is the singular role that simulation can play in combining recognition of emergency situations, cognitive and communication skills, technical and procedural skills, stress management, team leadership and coordination, self-paced learning and improvement, and repetition without consequences—elements often addressed less well or not at all when animals are used for training.

Hall A. Letter to the editor. *Military Medicine* 2014;179(7):vii.

Menon S, Kharasch M, Wang EE. High-fidelity simulation – emergency medicine. *Disease-A-Month* 2011;57:734-743.

Yager PH, Lok J, King JE. Advances in simulation for pediatric critical care and emergency medicine. *Current Opinion in Pediatrics* 2011;23:293-297.

Ten Eyck RP. Simulation in emergency medicine training. *Pediatric Emergency Care* 2011;27(4):333-341.

"The Accreditation Council for Graduate Medical Education transitioned to a competency-based assessment of residency programs in 2001 and included simulation as a method for incorporating the 6 core competencies into graduate medical education curricula. Over the past decade, numerous peer-reviewed publications have promoted simulation as an effective educational tool for each of the core competencies."

McLaughlin S, Fitch MT, Goyal DG, et al. Simulation in graduate medical education 2008: a review for emergency medicine. *Academic Emergency Medicine* 2008;15:1117-1129.

Rosen MA, Salas E, Wu TS, et al. Promoting teamwork: An event-based approach to simulation-based teamwork training for emergency medicine residents. *Academic Emergency Medicine* 2008;15:1190-1198.

Wang EE, Quinones J, Fitch MT, et al. Developing technical expertise in emergency medicine – the role of simulation in procedural skill acquisition. *Academic Emergency Medicine* 2008;15:1046-1057.



Simulation for Emergency Medicine Residency Training: A Sampling of Key Devices

Updated: July 10, 2017

In recent years, a growing number of emergency medicine residency programs have switched from using live animals to medical simulation and other human-based training methods. These methods allow trainees to improve their skills through iterative learning and repetitive practice. Numerous factors—including improvements in artificial tissue technology and an imperative to reduce and replace the use of animals in medical training courses—have led to a new era in emergency medical simulation. The advancement of programmable mannequins, computer-based models, and other forms of medical simulation has expanded the number of adult and pediatric scenarios which can be effectively simulated and incorporated into emergency medicine curricula. In this document we highlight only a few of the many simulation devices available for this field.



TraumaMan System

Simulab Corporation

The most widely used surgical simulator in the world, the TraumaMan System is a high-fidelity human-body mannequin with lifelike skin, subcutaneous fat, and muscle. The TraumaMan System allows students to practice a variety of surgical procedures, such as cricothyroidotomy, chest tube placement, needle decompression, pericardiocentesis, intravenous cutdown, diagnostic peritoneal lavage, and ultrasound examination. Replaceable tissues provide each trainee with a first cut experience and make this simulator ideal for team training scenarios.



SimMan 3G

Laerdal

SimMan 3G is a high-fidelity, full-body patient simulator that displays both physiological and neurological symptoms. It can be used to teach cricothyroidotomy, endotracheal intubation, retrograde intubation, chest tube placement, intraosseous needle insertion, intravenous insertion, and urinary catheterization. SimMan 3G can be programmed to simulate a multitude of scenarios requiring defibrillation, cardiac pacing, and the administration of cardiac medications.



Human Worn Partial Task Surgical Simulator (a.k.a. "Cut Suit")

Strategic Operations

The Cut Suit is a surgical training device worn by a course participant or actor which features breakable bones, interchangeable organs, and variable blood flow. It combines the sensation of working on live tissue with the realism of performing emergency assessment and treatment on a live patient. Wounds are created by the user,

and the skin and other organs are repairable, allowing for multiple uses and team training opportunities. The Cut Suit can be used to practice open thoracotomy and intrathoracic exploratory surgery, hemorrhage control of gross organ structures, chest tube placement, cricothyroidotomy, and urinary catheterization.



CentraLineMan

Simulab

CentraLineMan is a high-fidelity, partial-body simulator with an optional articulating head and replaceable tissues available to simulate a variety of patients (i.e., average, obese, and those with anatomical anomalies). It is the most widely used central venous catheterization simulator and allows trainees to practice performing full catheterization using ultrasound guided or landmark directed insertion.



Emergency Thoracotomy Trainer

Operative Experience, Inc.

The Emergency Thoracotomy Trainer is a high-fidelity, partial-body simulator with replaceable tissues. This task trainer can be used to simulate a variety of invasive procedures, such as open thoracotomy, aortic crossclamping, hilar clamping, one-handed cardiac massage, chest tube placement, and pericostal suturing.





Animal Use in Pediatrics Residency Programs in the United States and Canada: An Ongoing Survey

Updated: September 19, 2017

Programs Using Animals in Pediatrics Residency Training (1)

• Laval University - Quebec City, QC

Programs Using Nonanimal Models in Pediatrics Residency Training* (223)

Alabama (2)

- University of Alabama Medical Center Birmingham
- University of South Alabama Mobile

Arizona (2)

- Phoenix Children's Hospital Phoenix
- University of Arizona College of Medicine – Tucson

Arkansas (1)

• University of Arkansas for Medical Sciences – Little Rock

California (16)

- Children's Hospital-Oakland Oakland
- Children's Hospital of Los Angeles Los Angeles
- Kaiser Permanente Medical Group (Northern California) – Oakland
- Kaiser Permanente Southern California (Los Angeles) – Los Angeles
- Loma Linda University Health Education Consortium – Loma Linda
- Los Angeles County-Harbor-UCLA Medical Center – Torrance
- Naval Medical Center (San Diego) San Diego
- Stanford University Palo Alto
- UCLA Medical Center Los Angeles
- University of California (Davis) Health System – Sacramento

- University of California (Irvine)/Children's Hospital of Orange County – Orange
- University of California (San Diego) San Diego
- University of California (San Francisco)
 San Francisco
- University of California (San Francisco)/Fresno – Fresno
- University of Southern California/LAC+USC Medical Center – Los Angeles
- Valley Children's Healthcare Madera

Colorado (1)

 University of Colorado School of Medicine/Children's Hospital Colorado – Aurora

Connecticut (2)

- University of Connecticut Hartford
- Yale-New Haven Medical Center New Haven

Delaware (1)

 Sidney Kimmel Medical College at Thomas Jefferson University/DuPont Hospital for Children – Wilmington

District of Columbia (2)

 Children's National Medical Center – Washington

*The only acceptable use of animals is supervised procedural training (e.g., intubation) performed in the necessary care of animals and for the benefit of those animals.

• Georgetown University Hospital – Washington

Florida (11)

- Florida Hospital Medical Center Orlando
- Jackson Memorial Hospital/Jackson Health System – Miami
- Johns Hopkins All Children's Hospital St. Petersburg
- Miami Children's Health System/Nicklaus Children's Hospital – Miami
- Orlando Health Orlando
- Palm Beach Consortium for Graduate Medical Education – Loxahatchee
- University of Florida College of Medicine Jacksonville – Jacksonville
- University of Florida Gainesville
- University of Florida (Orlando) Orlando
- University of Florida (Pensacola) Pensacola
- University of South Florida Morsani Tampa

Georgia (5)

- Emory University Atlanta
- Medical Center of Central Georgia/Mercer University School of Medicine – Macon
- Medical College of Georgia Augusta
- Memorial Health–University Medical Center/Mercer University School of Medicine – Savannah
- Morehouse School of Medicine Atlanta

Hawaii (2)

- Tripler Army Medical Center Honolulu
- University of Hawaii Honolulu

Illinois (11)

- Advocate Christ Medical Center Oak Lawn
- Advocate Lutheran General Hospital Park Ridge
- John H. Stroger Hospital of Cook County – Chicago

- Loyola University Maywood
- McGaw Medical Center of Northwestern University – Chicago
- Mount Sinai Hospital Medical Center of Chicago Chicago
- Rush University Medical Center Chicago
- Southern Illinois University Springfield
- University of Chicago Chicago
- University of Illinois College of Medicine at Chicago – Chicago
- University of Illinois College of Medicine at Peoria – Peoria

Indiana (2)

- Indiana University School of Medicine Indianapolis
- St. Vincent Hospital and Health Care Center Indianapolis

Iowa (2)

- Central Iowa Health System (Iowa Methodist Medical Center) – Des Moines
- University of Iowa Hospitals and Clinics – Iowa City

Kansas (2)

- University of Kansas School of Medicine – Kansas City
- University of Kansas (Wichita) Wichita

Kentucky (2)

- University of Kentucky College of Medicine – Lexington
- University of Louisville Louisville

Louisiana (4)

- Louisiana State University New Orleans
- Louisiana State University (Shreveport) - Shreveport
- Our Lady of the Lake Baton Rouge
- Tulane University New Orleans

Maine (1)

• Maine Medical Center – Portland

Maryland (4)

- Johns Hopkins University Baltimore
- National Capital Consortium Bethesda
- Sinai Hospital of Baltimore Baltimore
- University of Maryland Baltimore

Massachusetts (5)

- Baystate Medical Center/Tufts University School of Medicine – Springfield
- Children's Hospital/Boston Medical Center – Boston
- Massachusetts General Hospital Boston
- Tufts Medical Center Boston
- University of Massachusetts Worcester

Michigan (10)

- Authority Health GME/Detroit Wayne County Health Authority – Detroit
- Children's Hospital of Michigan Detroit
- † EW Sparrow Hospital Lansing
- Grand Rapids Medical Education Partners/MSU/Helen DeVos Children's Hospital/Spectrum Health – Grand Rapids
- Hurley Medical Center/Michigan State University – Flint
- Michigan State University Lansing
- St. John Hospital and Medical Center Detroit
- University of Michigan Ann Arbor
- Western Michigan University Homer Stryker M.D. School of Medicine – Kalamazoo
- William Beaumont Hospital Royal Oak

Minnesota (2)

- Mayo Clinic College of Medicine (Rochester) Rochester
- University of Minnesota Minneapolis

Mississippi (1)

• University of Mississippi Medical Center – Jackson

Missouri (4)

- Children's Mercy Hospital Kansas City
- St. Louis University School of Medicine - St. Louis
- University of Missouri-Columbia Columbia
- Washington University/B-JH/SLCH Consortium – St. Louis

Nebraska (1)

• University of Nebraska Medical Center College of Medicine – Omaha

Nevada (1)

• University of Nevada Reno School of Medicine – Las Vegas

New Hampshire (1)

• Dartmouth-Hitchcock Medical Center – Lebanon

New Jersey (9)

- Atlantic Health Morristown
- Cooper Medical School of Rowan University/Cooper University Hospital – Camden
- Jersey Shore University Medical Center - Neptune
- Monmouth Medical Center Long Branch
- Newark Beth Israel Medical Center Newark
- New York Medical College at St. Joseph's Regional Medical Center – Paterson
- Saint Peter's University Hospital New Brunswick
- Rutgers New Jersey Medical School Newark
- Rutgers Robert Wood Johnson Medical School – New Brunswick

New Mexico (1)

• University of New Mexico – Albuquerque

New York (31)

- Albany Medical Center Albany
- Bronx-Lebanon Hospital Center Bronx

- Brookdale University Hospital and Medical Center Brooklyn
- Brooklyn Hospital Center Brooklyn
- Flushing Hospital Medical Center Flushing
- Good Samaritan Hospital Medical Center – West Islip
- Harlem Hospital Center NYC
- Hofstra Northwell School of Medicine at Cohen Children's Medical Center – New Hyde Park
- Hofstra Northwell School of Medicine at Staten Island University Hospital – Staten Island
- Icahn School of Medicine at Mount Sinai (Elmhurst) – Elmhurst
- Icahn School of Medicine at Mount Sinai – NYC
- Jacobi Medical Center/Albert Einstein College of Medicine – Bronx
- Lincoln Medical and Mental Health Center – Bronx
- Maimonides Medical Center Brooklyn
- Montefiore Medical Center/Albert Einstein College of Medicine – Bronx
- Nassau University Medical Center East Meadow
- New York Medical College at Westchester Medical Center – Valhalla
- New York Methodist Hospital Brooklyn
- New York Presbyterian Hospital (Columbia Campus) – NYC
- New York Presbyterian Hospital (Cornell Campus) – NYC
- New York University School of Medicine – NYC
- NYMC Metropolitan Hospital Center Islip
- Richmond University Medical Center Staten Island
- St. Barnabas Hospital Bronx
- Stony Brook Medicine/University Hospital – Stony Brook
- SUNY Health Science Center at Brooklyn – Brooklyn
- SUNY Upstate Medical University Syracuse
- University at Buffalo Buffalo
- University of Rochester Rochester

- Winthrop-University Hospital Mineola
- Woodhull Medical and Mental Health Center – Brooklyn

North Carolina (5)

- Carolinas Medical Center Charlotte
- Duke University Hospital Durham
- University of North Carolina Hospitals Chapel Hill
- Vidant Medical Center/East Carolina University – Greenville
- Wake Forest University School of Medicine – Winston-Salem

Ohio (9)

- Case Western Reserve University (MetroHealth) Cleveland
- Case Western Reserve University/University Hospitals Rainbow Babies and Children's Hospital – Cleveland
- Children's Hospital Medical Center of Akron/NEOMED – Akron
- Cincinnati Children's Hospital Medical Center/University of Cincinnati College of Medicine – Cincinnati
- Cleveland Clinic Foundation Cleveland
- Nationwide Children's Hospital/Doctors Hospital – Columbus
- Nationwide Children's Hospital/Ohio State University Columbus
- University of Toledo Toledo
- Wright State University Dayton

Oklahoma (4)

- † Oklahoma State University Medical Center – Tulsa
- University of Oklahoma Health Sciences Center – Oklahoma City
- University of Oklahoma School of Community Medicine (Tulsa) Tulsa

Oregon (1)

• Oregon Health & Science University – Portland

Pennsylvania (8)

- Albert Einstein Healthcare Network Philadelphia
- Children's Hospital of Philadelphia Philadelphia
- Crozer-Chester Medical Center Upland
- Geisinger Health System Danville
- Lehigh Valley Health Network/University of South Florida College of Medicine – Allentown
- Penn State Milton S. Hershey Medical Center – Hershey
- St. Christopher's Hospital for Children Philadelphia
- University of Pittsburgh Medical Center/UPMC Medical Education – Pittsburgh

Puerto Rico (3)

- Hospital Episcopal San Lucas/Ponce School of Medicine – Ponce
- San Juan City Hospital San Juan
- University of Puerto Rico San Juan

Rhode Island (1)

• Brown University – Providence

South Carolina (3)

- Greenville Health System/ University of South Carolina Greenville
- Medical University of South Carolina Charleston
- Palmetto Health/University of South Carolina School of Medicine – Columbia

South Dakota (1)

• University of South Dakota – Sioux Falls

Tennessee (4)

- East Tennessee State University Johnson City
- University of Tennessee College of Medicine at Chattanooga – Chattanooga
- University of Tennessee Memphis
- Vanderbilt University Medical Center Nashville

Texas (13)

- Baylor College of Medicine (Houston) Houston
- Baylor College of Medicine (San Antonio)/Texas Children's Hospital – San Antonio
- Driscoll Children's Hospital/Texas A&M College of Medicine – Corpus Christi
- San Antonio Uniformed Services Health Education Consortium – Fort Sam Houston
- Texas A&M College of Medicine-Scott and White – Temple
- Texas Tech University (Amarillo) Amarillo
- Texas Tech University Health Sciences Center Paul L. Foster School of Medicine – El Paso
- Texas Tech University (Lubbock) Lubbock
- University of Texas at Austin Dell Medical School – Austin
- University of Texas Health Science Center at Houston – Houston
- University of Texas Health Science Center School of Medicine at San Antonio – San Antonio
- University of Texas Medical Branch Hospitals – Galveston
- University of Texas Southwestern Medical School – Dallas

Utah (1)

• University of Utah – Salt Lake City

Vermont (1)

• University of Vermont Medical Center – Burlington

Virginia (6)

- Carilion Clinic-Virginia Tech Carilion School of Medicine – Roanoke
- Eastern Virginia Medical School Norfolk
- Inova Fairfax Medical Campus/Inova Fairfax Children's Hospital – Falls Church
- Navy Medical Center (Portsmouth) Portsmouth
- University of Virginia Charlottesville

• Virginia Commonwealth University Health System – Richmond

Washington (2)

- Madigan Healthcare System Tacoma
- University of Washington Seattle

West Virginia (3)

- Charleston Area Medical Center/West Virginia University (Charleston Division) – Charleston
- Marshall University School of Medicine - Huntington
- West Virginia University Morgantown

Wisconsin (3)

- Marshfield Clinic-St. Joseph's Hospital – Marshfield
- Medical College of Wisconsin Affiliated Hospitals – Milwaukee
- University of Wisconsin Madison

CANADA (16)

Alberta (2)

- University of Alberta Edmonton
- University of Calgary Calgary

British Columbia (1)

• University of British Columbia – Vancouver

Manitoba (1)

• University of Manitoba – Winnipeg

Newfoundland and Labrador (1)

• Memorial University of Newfoundland – St. John's

Nova Scotia (1)

• Dalhousie University – Halifax

Ontario (6)

- McMaster University Hamilton
- Northern Ontario School of Medicine Thunder Bay
- Queen's University Kingston
- University of Ottawa Ottawa
- University of Toronto Toronto
- University of Western Ontario London

Quebec (3)

- McGill University Montréal
- Université de Montréal Montréal
- Université de Sherbrooke Sherbrooke

Saskatchewan (1)

• University of Saskatchewan – Saskatoon



Animal Use in Allopathic and Osteopathic (†) Emergency Medicine Residency Programs in the United States: An Ongoing Survey

Updated: September 19, 2017

Programs Using Live Animals (18)

- Baystate Medical Center Springfield, Mass.
- Beth Israel Deaconess Medical Center/Harvard Medical School Boston, Mass.
- Dartmouth-Hitchcock Medical Center Lebanon, N.H.
- Doctors Hospital/OhioHealth Columbus, Ohio
- Einstein Medical Center Philadelphia, Pa.
- Hennepin County Medical Center Minneapolis, Minn.
- Madigan Healthcare System Tacoma, Wash.
- Naval Medical Center (Portsmouth) Portsmouth, Va.
- Naval Medical Center (San Diego) San Diego, Calif.
- Ohio State University Hospital Columbus, Ohio
- San Antonio Uniformed Services Health Education Consortium San Antonio, Tex.
- Sparrow Hospital/Michigan State University [M.D. Program] Lansing, Mich.
- (†) Sparrow Hospital/Michigan State University College of Osteopathic Medicine [D.O. Program] – Lansing, Mich.
- University of Missouri Columbia School of Medicine Columbia, Mo.
- University of Tennessee College of Medicine at Chattanooga Chattanooga, Tenn.
- University of Toledo Toledo, Ohio
- Vanderbilt University Medical Center Nashville, Tenn.
- Western Michigan University Homer Stryker M.D. School of Medicine Kalamazoo, Mich.

Programs Using Only Nonanimal Models (174)

Alabama (1)

 University of Alabama Medical Center – Birmingham

Arizona (3)

- (†) Kingman Regional Medical Center Kingman
- Maricopa Medical Center Phoenix
- University of Arizona College of Medicine – Tucson (without the South Campus designation)

Arkansas (1)

 University of Arkansas for Medical Sciences – Little Rock

California (14)

- Alameda Health System-Highland Hospital – Oakland
- (†) Arrowhead Regional Medical Center – Colton
- Desert Regional Medical Center Palm Springs
- Kaweah Delta Health Care District (KDHCD) – Visalia
- Kern Medical Center Bakersfield
- Los Angeles County-Harbor-UCLA Medical Center – Torrance
- Stanford University Hospital/Kaiser Permanente Medical Center – Stanford

- UCLA Medical Center/Olive View Los Angeles
- University of California (Davis) Health System – Sacramento
- University of California (Irvine) Orange
- University of California (San Diego) San Diego
- University of California (San Francisco)/Fresno Fresno
- University of California (San Francisco)/San Francisco General Hospital – San Francisco
- University of Southern California/LAC+USC Medical Center – Los Angeles

Colorado (1)

• Denver Health Medical Center – Denver

Connecticut (1)

• University of Connecticut - Hartford

Delaware (1)

• Christiana Care Health Services – Newark

District of Columbia (1)

• Georgetown University Hospital/Washington Hospital Center – Washington

Florida (7)

- Aventura Hospital and Medical Center Aventura
- Orlando Health Orlando
- (†) Palm Beach Consortium for GME/St. Lucie Medical Center – Port St. Lucie
- University of Central Florida College of Medicine – Orlando
- University of Florida College of Medicine Jacksonville – Jacksonville
- University of Florida Gainesville
- University of South Florida Morsani Tampa

Georgia (2)

• Emory University – Atlanta

• Medical College of Georgia – Augusta

Illinois (9)

- Advocate Christ Medical Center Oak Lawn
- (†) Franciscan St. James Health Olympia Fields
- John H. Stroger Hospital of Cook County – Chicago
- McGaw Medical Center of Northwestern University – Chicago
- Presence Resurrection Medical Center Chicago
- Southern Illinois University School of Medicine – Springfield
- University of Chicago Chicago
- University of Illinois College of Medicine at Chicago – Chicago
- University of Illinois College of Medicine at Peoria – Peoria

Indiana (1)

 Indiana University School of Medicine – Indianapolis

Iowa (1)

• University of Iowa Hospitals and Clinics – Iowa City

Kansas (1)

• University of Kansas School of Medicine – Kansas City

Kentucky (2)

- University of Kentucky College of Medicine – Lexington
- University of Louisville Louisville

Louisiana (3)

- Louisiana State University (Baton Rouge) – Baton Rouge
- Louisiana State University New Orleans
- Louisiana State University (Shreveport)
 Shreveport

Maine (1)

• Maine Medical Center – Portland

Maryland (2)

- Johns Hopkins University -- Baltimore
- University of Maryland Baltimore

Massachusetts (2)

- Boston University Medical Center Boston
- University of Massachusetts Worcester

Michigan (9)

- Central Michigan University College of Medicine – Saginaw
- Detroit Medical Center/Wayne State University (Detroit Receiving Hospital)
 – Detroit
- Detroit Medical Center/Wayne State University (Sinai-Grace Hospital) – Detroit
- (†) Henry Ford Allegiance Health Jackson
- (†) Mercy Health Muskegon
- (†) McLaren Oakland Pontiac
- St. John Hospital and Medical Center Detroit
- (†) St. John Providence Health System Warren
- University of Michigan Ann Arbor

Minnesota (1)

• HealthPartners Institute for Education and Research/Regions Hospital – St. Paul

Mississippi (2)

- (†) Merit Health Wesley Hattiesburg
- University of Mississippi Medical Center – Jackson

Missouri (4)

- Freeman Health System Joplin
- St. Louis University School of Medicine - St. Louis
- University of Missouri at Kansas City Kansas City
- Washington University/Barnes-Jewish Hospital/St. Louis Children's Hospital Consortium – St. Louis

Nebraska (1)

• University of Nebraska Medical Center – Omaha

Nevada (1)

 University of Nevada Reno School of Medicine – Las Vegas

New Jersey (8)

- Cooper Medical School of Rowan University/Cooper University Hospital – Camden
- Hackensack University Medical Center – Hackensack
- Morristown Medical Center Morristown
- Newark Beth Israel Medical Center Newark
- (†) Rowan School of Osteopathic Medicine/Inspira Health Network – Vineland
- (†) Rowan School of Osteopathic Medicine/Kennedy Health System – Stratford
- Rutgers New Jersey Medical School Newark
- Rutgers Robert Wood Johnson Medical School – New Brunswick

New Mexico (1)

• University of New Mexico – Albuquerque

New York (21)

- (†) Arnot Ogden Medical Center Elmira
- (†) Brookdale University Hospital and Medical Center Brooklyn
- Brooklyn Hospital Center Brooklyn
- (†) Coney Island Hospitals/NYC Health and Hospitals Brooklyn
- (†) Good Samaritan Hospital Medical Center – West Islip
- Hofstra Northwell Shore-LIJ School of Medicine at Long Island Jewish Medical Center – New Hyde Park
- Hofstra Northwell Shore-LIJ School of Medicine at North Shore University Hospital – Manhasset

- Hofsta Northwell School of Medicine at Staten Island University Hospital – Staten Island
- Icahn School of Medicine at Mount Sinai (Beth Israel) – New York
- Icahn School of Medicine at Mount Sinai/St. Luke's-Roosevelt Hospital Center – New York
- Maimonides Medical Center Brooklyn
- Montefiore Medical Center/Albert Einstein College of Medicine (Jacobi/ Montefiore) – Bronx
- New York Methodist Hospital Brooklyn
- New York-Presbyterian/Queens Flushing
- New York University School of Medicine/Bellevue Hospital Center – New York
- (†) Orange Regional Medical Center Middleton
- Stony Brook Medicine/University Hospital (SUNY) – Stony Brook
- SUNY Health Science Center at Brooklyn Brooklyn
- SUNY Upstate Medical University Syracuse
- University of Buffalo Buffalo
- Wyckoff Heights Medical Center Brooklyn

North Carolina (7)

- (*) Cape Fear Valley Medical Center Fayetteville
- Carolinas Medical Center Charlotte
- Duke University Durham
- (†) Southeastern Regional Medical Center – Lumberton
- University of North Carolina Hospitals Chapel Hill
- Vidant Medical Center/East Carolina University Greenville
- Wake Forest University School of Medicine – Winston-Salem

Ohio (13)

- (†) Adena Health System Chillicothe
- Akron General Medical Center Akron

- Case Western Reserve University (MetroHealth) – Cleveland
- Case Western Reserve University/University Hospitals Case Medical Center – Cleveland
- (†) Grandview Hospital and Medical Center – Dayton
- (†) Memorial Health System Marietta
- Mercy St. Vincent Medical Center/Mercy Health Partners – Toledo
- (†) Southern Ohio Medical Center Portsmouth (*closing June 2018*)
- (†) South Pointe Hospital Warrensville Heights
- (†) St. John Medical Center Westlake
- (†) University Hospitals Richmond Medical Center – Richmond Heights
- University of Cincinnati Medical Center/College of Medicine – Cincinnati
- Wright State University Kettering

Oklahoma (3)

- (†) Comanche County Memorial Hospital – Lawton
- (†) Oklahoma State University Medical Center – Tulsa
- University of Oklahoma School of Community Medicine (Tulsa) – Tulsa

Oregon (1)

• Oregon Health & Science University – Portland

Pennsylvania (10)

- (†) Aria Health Philadelphia
- (†) Conemaugh Memorial Medical Center – Johnstown
- Geisinger Health System Danville
- (†) Memorial Hospital York
- (†) Saint Vincent Hospital Erie
- Sidney Kimmel Medical College at Thomas Jefferson University – Philadelphia
- St. Luke's Hospital Bethlehem
- (†) St. Luke's Hospital Bethlehem
- Temple University School of Medicine - Philadelphia
- University of Pennsylvania Philadelphia

Puerto Rico (1)

• University of Puerto Rico - San Juan

South Carolina (3)

- Medical University of South Carolina Charleston
- University of South Carolina/Greenville Health System – Greenville
- University of South Carolina School of Medicine/Palmetto Health – Columbia

Tennessee (1)

 University of Tennessee College of Medicine at Murfreesboro – Murfreesboro

Texas (8)

- CHRISTUS Spohn Memorial Hospital Corpus Christi
- Darnall Army Medical Center Fort Hood
- John Peter Smith Hospital (Tarrant County Hospital District) – Fort Worth
- Texas A&M College of Medicine-Scott and White Temple
- Texas Tech University Health Sciences Center Paul L. Foster School of Medicine – El Paso
- University of Texas at Austin Dell Medical School – Austin
- University of Texas Health Science Center at Houston – Houston
- University of Texas Southwestern Medical School – Dallas

Utah (1)

• University of Utah – Salt Lake City

Virginia (4)

- Eastern Virginia Medical School Norfolk
- University of Virginia Charlottesville
- Virginia Commonwealth University Health System – Richmond
- Virginia Tech Carilion School of Medicine – Roanoke

Washington (1)

• University of Washington – Seattle

West Virginia (3)

- (†) Charleston Area Medical Center Charleston
- (†) Ohio Valley Medical Center Wheeling
- West Virginia University Morgantown

Wisconsin (1)

• University of Wisconsin – Madison

CANADA (15)

Alberta (1)

• University of Alberta – Edmonton

British Columbia (1)

• University of British Columbia – Vancouver

Manitoba (1)

• University of Manitoba – Winnipeg

Newfoundland and Labrador (1)

• Memorial University – St. John's

Nova Scotia (1)

• Dalhousie University – Halifax

Ontario (6)

- McMaster University Hamilton
- Northern Ontario School of Medicine Sudbury
- Queen's University Kingston
- University of Ottawa Ottawa
- University of Toronto Toronto
- Western University London

Quebec (3)

- McGill University Montréal
- Université de Sherbrooke Sherbrooke
- Université Laval Quebec

Saskatchewan (1)

• University of Saskatchewan - Regina

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President Timotry J. Gardney, VOL 54:44

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"Building healthier lives, free of cardiovascular diseases and stroke," 20-00856_000034 February 3, 2009



Laboratory Investigations Department People for the Ethical Treatment of Animals 501 Front Street Norfolk, VA 23510



Thank you for sharing your concerns with us regarding the American Heart Association's (AHA) policy against using animals in the Pediatric Advanced Life Support (PALS) course. Please allow me to address your specific concerns.

The AHA does not endorse the use of live animals for PALS training. The use of lifelike training manikins for PALS courses is the standard accepted norm.

In addition, endotracheal intubation is not required to successfully pass the PALS course. Therefore, the need for hands-on intubation training is limited within each course. The skill may be practiced by providers who are authorized to perform intubation in their profession, but the AHA recommends that any hands-on intubation training for the AHA PALS course be performed on lifelike human manikins.

We routinely send email reminders to our training network of instructors about our policies, including our policy on the use of animals in training. Additionally, we have posted this policy on our Instructor Network, an internal intranet site for our instructors.

We appreciate your request to strengthen the language of our PALS manuals. All of our course materials are on a five-year cycle that coincides with the release of our new Guidelines for CPR & Emergency Cardiovascular Care. Thus, any updates to our materials will occur between fall 2010 and 2011.

Again, thank you for your interest in this issue.

Sincerely,







Please remember the American Heart Association in your will.

American Heart Association, Association,

Learn and Live.

National Center 7272 Greenville Avenue • Dallas, Texas 75231-4596 Tel 214.373.6300 • americanheart.org





Live Animal Use for Advanced Trauma Life Support Programs in the United States and Canada: An Ongoing Survey Updated: September 11, 2017

Programs Using Live Animals for ATLS Courses (2)

- Baystate Medical Center Springfield, Mass.
- North Dakota State University-Sanford Health Fargo, N.D.

Programs Using Nonanimal Models for ATLS Courses (307)

Alabama (3)

- Birmingham Regional Emergency Medical Services System – Birmingham
- Huntsville Hospital/Corporate University – Huntsville
- University of South Alabama Mobile

Alaska (1)

 Providence Alaska Medical Center – Anchorage

Arizona (6)

- Banner Health/University Medical Center – Tucson
- Flagstaff Medical Center Flagstaff
- John C. Lincoln Hospital Dunlap
- Maricopa Medical Center Phoenix
- Scottsdale Healthcare Scottsdale
- St. Joseph's Hospital and Medical Center – Phoenix

Arkansas (1)

• University of Arkansas - Little Rock

California (16)

- Cedars Sinai Medical Center Los Angeles
- Harbor-UCLA Medical Center West Carson
- Kern Medical Center Bakersfield

- Loma Linda University Medical Center
 Loma Linda
- Natividad Medical Center Advanced Trauma Life Support – Salinas
- Riverside County Regional Medical Center – Moreno Valley
- San Francisco General Hospital San Francisco
- Santa Barbara Cottage Hospital Santa Barbara
- UC Davis Medical Center Sacramento
- UC Irvine Medical Center Orange
- UCLA Medical Center Los Angeles
- UC San Diego Medical Center San Diego
- UC San Francisco Fresno
- United Heart Training Center Suisun City
- University Medical Center Fresno
- USC Surgical Skills Training & Education Center – Los Angeles

Colorado (7)

- Denver Health Medical Center Denver
- Medical Center of the Rockies Loveland
- Poudre Valley Hospital Fort Collins
- St. Anthony's Hospital Denver
- St. Anthony Trauma Program Lakewood

- St. Mary's Hospital Grand Junction
- Swedish Medical Center Englewood

Connecticut (1)

• Yale School of Medicine – New Haven

Delaware (1)

• Christiana Hospital – Newark

District of Columbia (2)

- George Washington Department of Emergency Medicine Training Center (GWDEMTC) – Washington
- Medstar Washington Hospital Center Washington

Florida (9)

- Health First Training Center Melbourne
- Lakeland Regional Medical Center Lakeland
- Memorial Regional Hospital Hollywood
- Orlando Health Orlando
- Sacred Heart Hospital Pensacola
- Tampa General Hospital Tampa
- University of Florida Jacksonville
- University of Florida/Shands Hospital Gainesville
- University of Miami School of Medicine - Miami

Georgia (6)

- Atlanta Medical Center Atlanta
- Children's Healthcare of Atlanta Atlanta
- Emory University Atlanta
- Medical Center of Central Georgia Macon
- Medical College of Georgia Augusta
- Memorial Medical Center Savannah

Hawaii (1)

• The Queen's Medical Center - Honolulu

Idaho (2)

- Idaho State University Boise
- Idaho State University Pocatello

Illinois (11)

- Carle Foundation Hospital Urbana
- Chicago Committee on Trauma Chicago
- Christ Hospital and Medical Center Chicago
- Good Samaritan Hospital Downers Grove
- John H. Stroger Hospital of Cook County – Chicago
- Loyola University Chicago
- Mount Sinai Medical Center Chicago
- Rush University Medical Center Chicago
- Southern Illinois University School of Medicine – Springfield
- St. Francis Hospital Peoria
- University of Chicago Chicago

Indiana (7)

- Deaconess Hospital Evansville
- Memorial Hospital and Health System South Bend
- Methodist Hospital Indianapolis
- Parkview Memorial Hospital Ft. Wayne
- St. Mary's Medical Center Evansville
- St. Vincent Indianapolis Hospital --Indianapolis
- Wishard Memorial Hospital Indianapolis

Iowa (5)

- Iowa Health Des Moines
- Iowa Methodist Medical Center Des Moines
- Mercy Hospital Medical Center Des Moines
- Mercy Medical Center Sioux City
- University of Iowa Hospitals and Clinics
 Iowa City

Kansas (6)

- Hays Medical Center Hays
- Labette County Medical Center Parsons
- Stormont Vail Health Care Topeka
- University of Kansas Medical Center Kansas City

- Via Christi Regional Medical Center Wichita
- Wesley Medical Center Wichita

Kentucky (2)

- University of Kentucky Medical Center - Lexington
- University of Louisville Hospital Louisville

Louisiana (2)

- Louisiana State University Health Sciences Center – Shreveport
- Tulane University School of Medicine New Orleans

Maine (2)

- Eastern Maine Medical Center Bangor
- Maine Medical Center Portland

Maryland (2)

- R. Adams Cowley Shock Trauma Center Baltimore
- Uniformed Services University of the Health Sciences Bethesda

Massachusetts (8)

- Berkshire Medical Center Pittsfield
- Beth Israel Deaconess Medical Center Boston
- Boston University School of Medicine Boston
- Brigham and Women's Hospital Boston
- Lahey Hospital and Medical Center Burlington
- Massachusetts General Hospital Boston
- Tufts Medical Center Boston
- University of Massachusetts Medical School Worcester

Michigan (15)

- Borgess Medical Center Kalamazoo
- Bronson Methodist Hospital Kalamazoo
- Detroit Receiving Hospital Detroit
- Grand Rapids Medical Education and Research Center Grand Rapids

- Henry Ford Hospital Detroit
- Hurley Medical Center Flint
- Marquette General Hospital Marquette
- Michigan State University College of Osteopathic Medicine – East Lansing
- Oakwood Southshore Medical Center Trenton
- Sparrow Health System Lansing
- St. John's/Providence Southfield
- St. Joseph Mercy Hospital of Ann Arbor – Ann Arbor
- St. Lawrence Hospital Lansing
- Synergy Medical Education Alliance Saginaw
- University of Michigan Ann Arbor

Minnesota (8)

- Duluth Clinic Duluth
- Essentia Health/St. Mary's Medical Center – Duluth
- Hennepin County Medical Center Minneapolis
- Mayo Clinic Hospital-Saint Marys Rochester
- North Memorial Medical Center Robbinsdale
- Regions Hospital St. Paul
- St. Cloud Hospital St. Cloud
- University of Minnesota Medical School - Duluth

Mississippi (3)

- North Mississippi Medical Center Tupelo
- University of Mississippi School of Medicine – Jackson
- William Carey University College of Osteopathic Medicine – Hattiesburg

Missouri (7)

- Barnes-Jewish Hospital St. Louis
- CoxHealth Springfield
- Saint Louis University Hospital St. Louis
- St. John's Mercy Medical Center St. Louis
- St. John's Mercy Regional Health Center – Springfield
- Truman Medical Center Kansas City

• University of Missouri Health Sciences Center – Columbia

Montana (1)

 Montana EMS & Trauma Systems – Helena

Nebraska (6)

- Bryan LGH Medical Center-West Lincoln
- CHI Health Creighton University Medical Center – Omaha
- Good Samaritan Hospital Kearney
- Nebraska Medicine Omaha
- Regional West Medical Center Scottsbluff
- St. Francis Medical Center Grand Island

Nevada (2)

- Renown Health Reno
- University Medical Center Las Vegas

New Hampshire (1)

• Dartmouth-Hitchcock Medical Center – Lebanon

New Jersey (6)

- AtlantiCare Regional Medical Center Atlantic City
- Cooper Hospital Camden
- Morristown Memorial Hospital Morristown
- Robert Wood Johnson University Hospital – New Brunswick
- St. Joseph's Regional Medical Center Paterson
- University of Medicine and Dentistry of New Jersey University Hospital – Newark

New Mexico (1)

• University of New Mexico Hospitals – Albuquerque

New York (22)

- Albany Medical College Albany
- Bellevue Hospital New York
- Elmhurst Hospital Elmhurst

- Erie County Medical Center Buffalo
- Harlem Hospital New York
- Jacobi Hospital Center Bronx
- Jamaica Hospital Center Jamaica
- Kings County Hospital Center Brooklyn
- Lincoln Hospital Bronx
- Mary I. Bassett Hospital Cooperstown
- Nassau County Medical Center East Meadow
- New York Hospital New York
- New York Hospital Queens Flushing
- New York Presbyterian Hospital New York
- NYU Lutheran Medical Center Brooklyn
- Stony Brook University Hospital Stony Brook
- SUNY Upstate Medical University Syracuse
- United Health Services at Wilson Hospital – Johnson City
- University at Buffalo Buffalo
- University of Rochester Rochester
- Westchester County Medical Center Valhalla
- Winthrop-University Hospital Mineola

North Carolina (7)

- Brody School of Medicine at East Carolina University/Vidant Medical Center – Greenville
- Carolinas Medical Center Charlotte
- Duke University Medical Center –
 Durham
- Mission Hospital Asheville
- Moses Cone Hospital Health System Greensboro
- Wake Forest University School of Medicine – Winston-Salem
- WakeMed Raleigh

North Dakota (2)

- Altru Health Systems Grand Forks
- St. Alexius Medical Center Bismarck

Ohio (15)

• Akron City Hospital - Akron

- Bethesda North Hospital Cincinnati
- Central Ohio Trauma System Columbus
- Cincinnati Children's Hospital Medical Center – Cincinnati
- Kettering Medical Center Kettering
- Medical College of Ohio Toledo
- MetroHealth Medical Center Cleveland
- Miami Valley Hospital Dayton
- Middletown Regional Hospital Middletown
- St. Elizabeth Health Center Youngstown
- St. John Medical Center Westlake
- The Health Collaborative Cincinnati
- University Hospital Cincinnati
- University Hospitals Cleveland
- University of Toledo Medical Center Toledo

Oklahoma (4)

- OU Medical Center Oklahoma City
- St. Francis Hospital Tulsa
- St. John Medical Center Tulsa
- University of Oklahoma Medical Center - Oklahoma City

Oregon (4)

- Legacy Emanuel Medical Center Portland
- Oregon Health & Science University Portland
- Salem Hospital Salem
- St. Charles Medical Center Bend

Pennsylvania (18)

- Albert Einstein Medical Center Philadelphia
- Allegheny General Hospital Pittsburgh
- Altoona Hospital Altoona
- Conemaugh Memorial Medical Center Johnstown
- Crozer-Chester Medical Center Upland
- Geisinger Medical Center Danville
- Geisinger Wyoming Valley Medical Center – Wilkes-Barre

- George E. Moerkirk Emergency Medicine Center at Lehigh Valley Hospital Center – Allentown
- Hahnemann Medical College at Drexel University Philadelphia
- Hamot Medical Center Erie
- Hershey Medical Center Hershey
- Hospital of the University of Pennsylvania – Philadelphia
- Lehigh Valley Health Network Allentown
- Robert Packer Hospital Sayre
- St. Luke's Hospital Bethlehem
- Temple University Hospital Philadelphia
- University of Pittsburgh Medical Center - Pittsburgh
- York Hospital York

Rhode Island (1)

• Rhode Island Hospital – Providence

South Carolina (3)

- Greenville Hospital Greenville
- Medical University of South Carolina Charleston
- Richland Memorial Hospital Columbia

South Dakota (1)

• Hilltop Church – Sioux Falls

Tennessee (7)

- Bristol Regional Medical Center Bristol
- Erlanger Health System Chattanooga
- Holston Valley Hospital Kingsport
- Johnson City Medical Center Johnson City
- University of Tennessee College of Medicine – Knoxville
- University of Tennessee College of Medicine – Memphis
- Vanderbilt University Nashville

Texas (16)

• Baylor University Medical Center – Dallas

- Doctors Hospital at Renaissance Edinburg
- East Texas Medical Center Tyler
- Harris Methodist Fort Worth Hospital Fort Worth
- Hermann Hospital Houston
- JPS Health Network Fort Worth
- R.E. Thomason Hospital El Paso
- Scott and White Hospital and Clinic Temple
- St. Joseph Medical Center and Valley Baptist – Houston
- Texas Tech University Lubbock
- University Medical Center at Brackenridge – Austin
- University Medical Center El Paso
- University of Texas Health Science Center – San Antonio
- University of Texas Medical Branch Galveston
- University of Texas Southwestern Medical Center – Dallas
- Valley Baptist Medical Center Harlingen

Utah (4)

- Intermountain Medical Center Murray
- LDS Hospital Salt Lake City
- University of Utah Hospital Salt Lake City
- Utah Valley Regional Medical Center Provo

Vermont (1)

• University of Vermont College of Medicine – Burlington

Virginia (5)

- Carilion Roanoke Memorial Hospital Roanoke
- Inova Fairfax Hospital Falls Church
- Tidewater Center for Life Support Norfolk
- University of Virginia Health System Charlottesville
- Virginia Commonwealth University Medical Center/Medical College of Virginia – Richmond

Washington (3)

- Deaconess Medical Center Spokane
- Harborview Medical Center Seattle
- Providence Sacred Heart Medical Center & Children's Hospital – Spokane

West Virginia (4)

- CAMC Life Support Training Center Charleston
- Ohio Valley Medical Center Wheeling
- St. Mary's Medical Center Huntington
- West Virginia University Center for Rural Emergency Medicine – Morgantown

Wisconsin (4)

- Gundersen Lutheran Medical Center La Crosse
- Marshfield Clinic Marshfield
- Medical College of Wisconsin Milwaukee
- University of Wisconsin/Madison Hospital – Madison

Wyoming (3)

- St. John's Medical Center Jackson
- Wyoming Committee on Trauma Casper
- Wyoming Committee on Trauma Cheyenne

CANADA (32)

Alberta (4)

- Chinook Regional Hospital Lethbridge
- Foothills Medical Centre Calgary
- University of Alberta Edmonton
- University of Calgary Calgary

British Columbia (8)

- British Columbia Children's Hospital Vancouver
- Cowichan District Hospital Duncan
- Prince George Regional Hospital Prince George
- Royal Columbian Hospital New Westminster

- University of British Columbia Vancouver
- University of Victoria Victoria
- Vancouver General Hospital Vancouver
- Victoria General Hospital Victoria

Manitoba (1)

• University of Manitoba – Winnipeg

New Brunswick (1)

• Saint John Regional Hospital – Saint John

Newfoundland and Labrador (1)

• St. John's ATLS – St. John's

Nova Scotia (3)

- EHS Nova Scotia Trauma Program Halifax
- Queen Elizabeth II Health Center Halifax
- St. Martha's Regional Hospital Antigonish

Ontario (7)

- Hotel Dieu Hospital/Queen's University - Kingston
- London Health Sciences Center London
- McMaster University Medical Center Hamilton
- Ottawa Hospital Ottawa
- Royal Victoria Regional Health Center Barrie
- St. Michael's Hospital Toronto
- Sunnybrook Health Science Center Toronto

Quebec (5)

- Hôpital du Sacré-Coeur de Montréal Montréal
- McGill University Montreal
- Montreal General Hospital Montreal
- Université Laval Québec City
- University of Sherbrooke Sherbrooke

Saskatchewan (2)

• Regina General Hospital – Regina

 University Hospital Saskatoon – Saskatoon



Inspection Report

University Of Tennesee - Chattanooga	Customer ID:	29	
975 East Third St.	Certificate:	63-R-0001	
Box 339	Site:	001	
College Of Medicine	COLLEG	LEGE OF MEDICINE	
Chattanooga, TN 37403			
	Туре:	ROUTINE INSPECTION	
	Date:	12-OCT-2017	

No non-compliant items identified during this inspection.

This inspection and exit interview were conducted with undersigned facility representative.

Prepared By:			
	BRUNKHORST SUSANNE, D V M	USDA, APHIS, Animal Care	Date: 12-OCT-2017
Title:	VETERINARY MEDICAL OFFICER	1076	
Received By:		Obtained by Rise	e for Animals. Uploaded 07/08/2020
	(b) (6), (b) (7)(C)		Date:
Title: 20-00856	FACILITY REPRESENTATIVE		12-OCT-2017



United States Department of Agriculture Animal and Plant Health Inspection Service

Customer: 29 Inspection Date: 12-OCT-17

Animal Inspected at Last Inspection

Cust No	Cert No	Site	Site Name	Inspection
29	63-R-0001	001	UNIVERSITY OF TENNESEE - CHATTANOOGA	12-OCT-17
Count	Species			

000002	DOMESTIC PIG / POTBELLY PIG / MICRO PIG

000002 Total