

Animal Welfare-Friendly Surgery Training

Innovative Programs Benefit Veterinary Students and Animals in Need

LEADERSHIP COUNCIL

- Andrew N. Rowan, PhD, *Chair*
Washington, D.C.
- Richard Bachman, DVM
Vallejo, Calif.
- Lauren Bartfield, DVM
New Hill, N.C.
- Gary Block, DVM, MS, DACVIM
East Greenwich, R.I.
- Holly Cheever, DVM
Voorheesville, N.Y.
- Kim Danoff, DVM
Vienna, Va.
- Nicholas Dodman, BVMS, MRCVS, DACVB
Grafton, Mass.
- Brad Evergreen, DVM
Monroe, Wash.
- Brenda Forsythe, MS, PhD, DVM, CAAB
Guadalupe, Calif.
- Madeline Graham, DVM
Los Angeles, Calif.
- Holly Hazard, JD
Washington, D.C.
- Barb Jones, DVM, MS
Davis, Calif.
- Paula A. Kislak, DVM
Santa Barbara, Calif.
- Patricia N. Olson, DVM, PhD
Denver, Colo.
- Larry Peetz, DVM
Portland, Ore.
- Gordon B. Stull, VMD
Vincetown, N.J.

ASSOCIATE VETERINARIANS

- Eric Davis, DVM
Salinas, Calif.
- Barbara Hodges, DVM, MBA
Dixon, Calif.
- Susan B. Krebsbach, DVM
Oregon, Wis.

The terminal use of animals in veterinary training has been a point of controversy among veterinary students, faculty and the profession as a whole for the past few decades with the trend being to replace training methods that result in some level of harm to the animals as well as to eliminate “terminal surgeries” - in which the animals are euthanized after one or more surgical training exercises. Some faculty continue to advocate for the continued use of such procedures to teach clinical and surgical skills but there is growing evidence that veterinary training, including surgical training, can be both non-harmful and beneficial to the animals involved *and* produce qualified veterinarians.

Table of Contents:

The Issues: Concepts Relating to Surgery Training and Animal Welfare	2
Curriculum Suggestions: Incorporating Animal Welfare Friendly Surgery Training into Veterinary Education	3
Spay/Neuter Programs.....	4
Feral Cat Clinics	5
Surgical Treatment Programs.....	5
Field Service Opportunities.....	7
Ethical-Source Cadavers (Willed-Body Donation Programs)	8
Models, Mannikins and Simulators.....	9
Addendum: An Example of a Surgical Guide.....	12
References.....	13

The Issues: Concepts Relating to Surgery Training and Animal Welfare

1. *Harming and killing animals in veterinary education directly contradicts the commitment to “First, do no harm.”*

Students are drawn to the veterinary profession because of their commitment to help animals. Killing or harming animals in training presents a serious moral conflict with the above commitment and many students report that having to euthanize a healthy animal following a surgery training exercise is a traumatic experience that casts a shadow on their entire academic career. On the other hand, other students worry that a lack of “hands-on” experience may compromise their education. Fortunately, there are now sufficient examples that demonstrate that veterinary students can avoid harming animals specifically for training and gain plenty of “hands-on” experience.

2. *There are alternative surgical training methods available, already utilized by many veterinary schools, which provide comparable or even improved learning experiences that involve neutral or beneficial use of animals.*

Clinical practice—such as with spay and neuter clinics, community practice operations, shelter medicine rotations, feral cat clinics or other clinical settings—give students the opportunity, under supervision, to interact with live patients, increase their learning opportunities and provide beneficial treatment for the animals. Many veterinary schools are partnering with local animal shelters and rescue groups to provide spay and neuter services for dogs and cats who are then returned for adoption. The use of models, mannikins and simulators, multi-media computer simulation, and ethically-sourced cadavers provide options for anatomy training, clinical and surgical skills practice, improved conceptual understanding and problem-solving capabilities, and hands-on training that treat and/or benefit live animals.



A veterinary student performs surgery during a HSVMA Field Services clinic.

Photo credit: Windi Wojdak, RVT

3. *There is evidence that veterinary students who are trained with alternative training methods receive a comparable or even improved learning experience.*

A number of studies have reviewed the efficacy of alternative training methods and found that veterinary students achieved equivalent results or superior learning outcomes with such methods.^{1, 2} Some veterinary schools, such as Tufts University Cummings School of Veterinary Medicine, Virginia-Maryland Regional College of Veterinary Medicine and the Ohio State University College of Veterinary Medicine have eliminated terminal surgeries from both core and elective curriculum and continue to graduate competent veterinarians.

4. *There is growing pressure for change, not only from veterinary students and faculty, but from the entire veterinary profession and the public at large as animal welfare issues move to the forefront of societal concerns.*

The welfare of animals is a growing concern for the majority of the U.S. public. This has translated into pressure to reduce, refine and eliminate any harmful and terminal use of animals. Negative publicity surrounding the terminal and harmful use of animals³ illustrates this trend. Veterinary school community practice clinics that partner with animal shelter and rescue groups demonstrate the opportunities to build community goodwill by taking a different approach.⁴

Curriculum Suggestions: Incorporating Animal Welfare Friendly Surgery Training into Veterinary Education

Animal-friendly surgery training can be incorporated into existing veterinary curriculum or developed as new training opportunities to benefit both students and animals. There are a variety of veterinary surgical training methods which involve beneficial or neutral use of animals. The six methods featured in this article are:

1. Spay/Neuter Programs
2. Feral Cat Clinics
3. Surgical Treatment Programs
4. Field Service Opportunities
5. Ethical-Source Cadavers (Willed Body Donation Programs)
6. Models, Mannikins, and Simulators

Spay/Neuter Programs

Many schools have partnered with local animal shelters and rescue groups to develop spay and neuter programs that provide surgery training for veterinary students and sterilization services for animals who are returned for adoption. These programs range from incorporating a spay/neuter surgery into a surgery lab at a veterinary school to sending veterinary students to work at a shelter or offering mobile spay/neuter services out in the community.

Example:

1. Mississippi State University College of Veterinary Medicine

Pet Health and Spay/Neuter Program

This program offers its students all of the activities outlined above. Students perform three spay or neuter surgeries on shelter animals during surgery labs conducted in the second year of the professional curriculum. In the third year, students participate in a six-week clinical rotation, called the Community Veterinary Services (CVS), which utilizes



Dr. Philip Bushby from Mississippi State University College of Veterinary Medicine assists a junior veterinary student with surgery.

Photo credit: Drs. Kaysey Burns and Katie Pruitt

a mobile veterinary unit owned by the school. During that rotation they make two trips to shelters and during those trips perform, on average, between 15 to 20 sterilization surgeries. Both the surgery labs and the CVS shelter trips are now part of the required curriculum. In the fourth year, Mississippi State offers a Shelter



The Mississippi State University's Mobile Veterinary Clinic.

Photo credit: Drs. Kaysey Burns and Katie Pruitt

Medicine Spay-Neuter elective that two thirds of the senior students opt to enroll in. During that elective, which lasts two weeks for each student, the students average more than 60 spay or neuter surgeries and visit between six to eight different shelters.⁵

Feral Cat Clinics

Feral cat clinics are a variation on the spay/neuter programs outlined above. Feral cats are either brought to the veterinary school by their caretakers or the veterinary school partners with a local rescue group to coordinate a feral cat clinic off site. These types of programs also expose students to cats with medical conditions not commonly seen in veterinary hospitals (including pregnancy, severe parasite infection, viral diseases, etc.).

Examples:

1. University of Florida College of Veterinary Medicine

Operation Catnip

The veterinary college at the University of Florida hosts a monthly feral cat clinic run by volunteers with a group called Operation Catnip,⁶

2. Iowa State University College of Veterinary Medicine

Feral Cat Alliance

The veterinary college at Iowa State University hosts a similar clinic run by the Feral Cat Alliance, a volunteer group made up of students and faculty from the school.⁷



Second, third and fourth-year students prepare a feral cat for surgery and monitor anesthesia under the supervision of an anesthesia resident.

Photo Credit: Iowa State University

Surgical Treatment Programs

Some veterinary schools are developing expanded surgical training programs that offer procedures beyond sterilization surgeries for shelter and rescue animals. Those might include such procedures as fracture repair, limb amputation, wound repair, object removal and eye enucleation. When the rescue groups and shelters intake injured or ill animals who are in need of those procedures, they can be

brought to the school for treatment. The students assist with the surgeries, or perform the procedures under close supervision from faculty members, and the animals are subsequently returned for adoption.

These expanded surgical programs allow students to receive additional clinical and surgical experience in a variety of procedures. They also allow local rescue groups to save animals who might otherwise be euthanized due to a lack of resources to cover the cost of necessary medical treatment. Schools which have instituted this type of program have received enthusiastic feedback from veterinary students and animal rescue groups in the area.

Examples:

1. University of California School of Veterinary Medicine

Surgery Program to Aid Shelter Animals⁸

This surgery program replaced a terminal-surgery elective in the summer of 2004. It builds on the spay-neuter program to include other surgical treatments needed by dogs and cats in area shelters. These procedures include treating and closing wounds, repairing fractured bones and removing foreign objects.

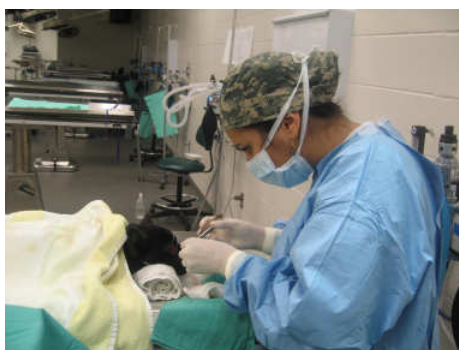
During this course, students are responsible for all aspects of pre-surgery evaluation, surgery, anesthesia, recovery and follow-up care. Once animals have healed, they are returned to the shelter for adoption.

2. University of Florida College of Veterinary Medicine

HAARTS (Helping Alachua's Animals Requiring Treatment and Surgery)⁹

The HAARTS program, launched in 2008, treats ill and injured animals from the community and has received

an enthusiastic response from veterinary students and animal rescuers.



A fourth-year veterinary student from the University of Florida repairs a cherry eye.

Photo credit: Dr. Natalie Isaza



A HAARTS patient recovering from an eye-enucleation.

Photo credit: Dr. Natalie Isaza

Field Service Opportunities

Field service work, either arranged by the student or through formal externship programs, is an effective way for veterinary students to obtain hands-on clinical and surgical training while also helping animals in a positive way. In some cases, veterinary schools allow students to participate in these programs for credit.

Examples:

1. Humane Society Veterinary Medical Association (HSVMA)

Field Services Program

This unique program provides hands-on training for hundreds of veterinary students each year at clinics on Native American reservations and other under-served regions of the United States, as well as some international locations. Students perform a variety of functions at the clinics, ranging from physical exams to medical procedures to spay and neuter surgeries, depending on their level of training. During 2008, HSVMA Field Services trained more than 400 veterinary students from 20 veterinary schools in the United States and Europe in surgery, anesthesia, analgesia and humane animal handling. During that time, the Field Services team treated 6,500 animals.¹⁰



HSVMA Field Services in action—surgery prep and surgery.
Photo Credit: Windi Wojdak, RVT



2. Escondido Humane Society in California

This rescue organization offers junior and senior level veterinary students a two-week externship that exposes the student to surgery training as well as animal control, animal adoption, preventative medicine and epidemiology, clinical medicine and animal cruelty investigations.

3. Humane Society of South Mississippi

This humane society has a two to six week externship program for veterinary students. Externs participate in surgery on shelter animals, including spay/neuter, amputations, ophthalmic and orthopedic procedures. They also perform exams and do diagnostic testing on shelter animals.

4. The University of California Koret Shelter Medicine Program

This program maintains a list of externship opportunities for veterinary students at <http://www.sheltermedicine.com/education/externship.php>.

Ethical-Source Cadavers (Willed-Body Donation Programs)

Anatomy (either basic or as a supplement to surgery) can be taught using ethically-sourced cadavers.

The cadavers are donated by caregivers, either through the school's veterinary teaching hospital or area veterinary clinics and then preserved for use in instruction (preservation methods vary depending on the intended use of the cadaver and can range from freezing to embalming)¹¹.

These programs are typically referred to as body donation programs, willed-body donation programs or educational memorial programs. They draw their inspiration from human medical schools where, for more than a century, students have learned by using donated cadavers. Several veterinary schools have implemented body donation programs to provide cadavers for anatomy, pathology, surgery and other curriculum needs.

Examples:

1. The Ohio State University College of Veterinary Medicine

The Ohio State University has utilized cadavers in a surgery training lab to help students master basic surgical skills such as tissue handling and suturing¹² before graduating to working with live animals via a collaborative surgery program with a local shelter.

2. Tufts University Cummings School of Veterinary Medicine

Tufts University has utilized cadavers for basic surgical training instruction as well as for complicated surgical and clinical procedures including orthopedics, dentistry, equine nerve blocks, bone marrow aspiration, chest tube placement, thoracocentesis and transtracheal aspiration.¹³

3. Western University of School of Health Sciences College of Veterinary Medicine

An integral component of body donation programs is the tactful and respectful treatment of the clients who are donating their former companions for use in veterinary training. When properly implemented, as many as half the clients choose to donate their pet's body for training (many welcome being able to do so). Some veterinary schools memorialize the former animal companions. For example, at Western University, a memorial service is held at the beginning of each term to acknowledge the humans who are donating their companion animals and to celebrate the animals' lives.¹⁴



The WAVE brochure.

Models, Mannikins and Simulators

Models and mannikins allow veterinary students to practice and refine skills and techniques before working with live animals. These tools facilitate training in animal handling, blood sampling, intubation, CPR techniques and some surgical skills.

Examples:**1. Rescue Critters®**

Rescue Critters produces animal mannikins that are used by many veterinary programs to teach clinical skills like endotracheal tube placement, suture ties, performing first aid and CPR, auscultation, placing a urinary catheter, IV blood draws and injections, splinting and bandaging, and most recently, surgical sterilization training. The company is producing a new line of mannikins, representing a six-month-old male and female puppy, for surgical sterilization training.¹⁵



Veterinary students learn intubation using the Rescue Critters® K-9 Intubation Trainer.

Photo credit: Meredith Rives, DVM

2. DASIE (Dog Abdominal Surrogate for Instructional Exercises)

DASIE, developed at the Ontario Veterinary College, has been a useful tool for teaching abdominal surgery at a number of institutions.¹⁶



The DASIE—Dog Abdominal Surrogate for Instructional Exercises

Simulators are useful tools for surgery training since they provide an opportunity to practice psychomotor skills and procedures in an interactive manner. Virtual reality systems provide 3-D visual experiences and haptic feedback (tactile information).

Example:

1. The Ohio State University College of Veterinary Medicine

The Ohio State University is integrating high resolution simulation into a third-year core surgery skills course. The simulations also offer haptic capability, so students can feel forces applied during interaction with the simulators, such as the pressures applied to the drill during a simulated laminectomy.¹⁷

Addendum: An Example of a Surgical Guide

The attached document describes the “Surgery Basics” expected to be understood by veterinary student volunteers who participate in Humane Society Veterinary Medical Association (HSVMA) Field Services Clinics (formerly known as Rural Area Veterinary Services (RAVS)).

As explained in the document, the information presented is not designed to be an all-inclusive course on surgery. It is a review of information that all volunteers participating in HSVMA Field Services Clinics are expected to be familiar with, including basic surgical techniques and surgical anatomy. The objective of the guide is to review aspects of spay/neuter procedures and general surgery that the HSVMA Field Services team feels is particularly important. Specific techniques are presented and all volunteers are expected to be familiar with these techniques; not as the only safe and effective approach, but as a way of standardizing the teaching process. Variations may be discussed with the veterinarian in charge at the time of the clinic.

The following is an outline of the topics covered:

1. The Surgical Team
 - a. Responsibilities of the Surgical Team
2. Presurgical Preparation of the Patient
 - a. Hair removal
 - b. Positioning
 - c. Skin Preparation
 - d. Preparation of Surgical Team
 - e. Draping
3. Basic Surgical Technique
 - a. Incision
 - b. Hemorrhage control
4. Ovariohysterectomy Tips
 - a. Locating the linea alba
 - b. Entering the abdomen
 - i. Note on incision placement
 - ii. Note on incision site
 - c. Suture sizes and applications
 - d. Suture handling
 - e. Suture patterns
 - f. Application of patterns
 - i. Body wall closure
 - ii. Subcutaneous closure
 - iii. Skin closure
5. References
6. Common mistakes in Surgery Practice and How to Avoid Them
7. General Surgery Reminders

References

- ¹ Patronek GJ, Rauch A. Systematic review of comparative studies examining alternatives to the harmful use of animals in biomedical education. *J Am Vet Med Assoc* 2007;230(1):37-43.
- ² Knight A. The effectiveness of humane teaching methods in veterinary education. *ALTEX: Alternatives to Animal Experimentation* 2007;24(2):91-109.. Available at <http://www.altex.ch/en/index.html?id=50&iid=86>.
- ³ Susan Krebsbach, DVM, "Healing animals needs to be vet schools' focus," *The Oklahoman*, March 8, 2009, <http://www.newsok.com/healing-animals-needs-to-be-vet-schools-focus/article/3351178?custom_click=headlines_widget > (Accessed October 29, 2009).
- ⁴ University of Florida College of Veterinary Medicine, Community Outreach, <<http://www.vetmed.ufl.edu/extension/programs/outreach.html>> (Accessed October 29, 2009).
- ⁵ Leila Lotfi, "Mississippi State Veterinary Students Perform Surgeries at Local Shelters," *Veterinary Practice News*, <<http://www.veterinarypracticenews.com/vet-school-spotlight/mississippi-state-university-college-of-veterinary-medicine.aspx>> (Accessed October 29, 2009).
- Mississippi State University College of Veterinary Medicine, Community Veterinary Services, <http://www.cvm.msstate.edu/ahc/sa_primary_care/shelter_medicine.html> (Accessed October 29, 2009).
- ⁶ University of Florida College of Veterinary Medicine, Operation Catnip, <<http://www.vetmed.ufl.edu/college/departments/sacs/catnip/> > (Accessed October 29, 2009).
- ⁷ Iowa State University College of Veterinary Medicine, Organizations and Clubs-Feral Cat Alliance, <http://vetmed.iastate.edu/academics/student-organizations-and-club#FERAL_CAT > (Accessed October 29, 2009).
- ⁸ University of California Davis, "New Veterinary Surgery Program to Aid Shelter Animals," *UC Davis News & Information*, October 10, 2003, <http://www.news.ucdavis.edu/search/news_detail.lasso?id=6690>, (Accessed October 29, 2009).
- ⁹ Humane Society Veterinary Medical Association, "New Surgery Program Saves Pup," *HSVMA Advocacy News*, January 15, 2009, <http://www.hsvma.org/advocacy/news/new_surgery_program_saves_pup.html>, (Accessed October 29, 2009).
- ¹⁰ Humane Society Veterinary Medical Association, "2008: A Look Back at Our Success," *HSVMA Field Services News*, December 8, 2008, <http://www.hsvma.org/field_services/news/2008_a_look_back_at_our_success.html>, (Accessed October 29, 2009).
- ¹¹ Tufts University Cummings School of Veterinary Medicine, DVM Animal Use, <http://www.tufts.edu/vet/dvm/animal_use.html>, (Accessed October 29, 2009).
- ¹² Smeak DD. Teaching Surgery to the Veterinary Novice: The Ohio State University Experience. *J Vet Med Ed* 2007;34(5):620-627. <<http://www.jvmeonline.org/cgi/content/abstract/34/5/620>>, (Accessed October 29, 2009).
- ¹³ Tufts University Cummings School of Veterinary Medicine, DVM Animal Use, <http://www.tufts.edu/vet/dvm/animal_use.html>, (Accessed October 29, 2009).
- ¹⁴ Western University of Health Sciences College of Veterinary Medicine, Willing Deceased Animals for Veterinary Education (WAVE), <<http://www.westernu.edu/xp/edu/veterinary/wave.xml>>, (Accessed October 29, 2009).
- ¹⁵ Rescue Critters!® Animal Training Mannikins, <<http://www.rescuecritters.com/>>, (Accessed October 29, 2009).

¹⁶Holmberg DL, Cockshutt JR, Basher AWP. Use of a dog abdominal surrogate for teaching surgery. *J Vet Med Ed* 1993;20(2): 61-62.

¹⁷ Stredney D, et al. Simulation Technology in Veterinary Education, Research and Surgical Training. *Proceedings 2006 ACVS Veterinary Symposium*, The Surgical Summit, Washington, DC, 5-7 Oct. 2006.