

**Behind the Curve of Medical Education: The Use of Dogs for
Physiology Instruction at New York Medical College**

A Report by the Physicians Committee for Responsible Medicine

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Behind the Curve of Medical Education: The Use of Dogs for Physiology Instruction at New York Medical College

I. Executive Summary

Twenty years ago, live dogs, cats, pigs, and other animals were commonly used in physiology, pharmacology, and surgery courses at medical schools. A standard laboratory exercise involved anesthetizing an animal, injecting the animal with a series of drugs or otherwise manipulating his physiological responses, and performing various surgical or other procedures. These were known as terminal exercises, because the animals were killed while under anesthesia.

Today about 90 percent of U.S. medical schools have eliminated live animal laboratories from their curricula. Even greater is the number of medical schools—117 of 125—that no longer use animals specifically to instruct physiology courses. Advances in medical simulation technology and computer-based interactive learning, increased awareness of ethical concerns, and progressive curriculum reform recognizing the need for human-based learning are a few of the many factors that have contributed to the replacement of live animals in medical education.

On March 10, 2007, the American Medical Student Association (AMSA) House of Delegates voted unanimously in favor of a resolution stating that AMSA “strongly encourages the replacement of animal laboratories with non-animal alternatives in undergraduate medical education.”¹ This clear and strong position by the country’s largest medical student organization relates directly to the use of live dogs in the physiology course at New York Medical College (NYMC), and makes it clear that America’s medical students want to end live animal use in their courses.

Despite these imperatives, NYMC continues to use nine dogs per year² in terminal exercises to instruct the first-year medical physiology course. NYMC is the only medical school in New York state (out of 12 allopathic and two osteopathic schools) still following this archaic practice. Since 2006, three other New York state medical schools—the University of Rochester School of Medicine & Dentistry, Mount Sinai School of Medicine, and Stony Brook University School of Medicine—ceased using live animals in their medical student courses.

Several aspects of NYMC’s continued animal use are particularly troubling, including: (1) Francis L. Belloni, Ph.D., NYMC physiology professor and director of the first-year physiology course, has admitted that information conveyed in the dog lab could be learned in other ways;³ (2) NYMC obtains its dogs from a Class B random source animal dealer;⁴ and (3) despite the overwhelming shift away from animal use in U.S. medical schools NYMC administrators and faculty continue to use an outdated and inferior educational method.

Humane and educational considerations support eliminating the use of animals for medical student teaching at NYMC, and the school should immediately replace the use of animals with alternative non-animal teaching methods.

II. Development and Adoption of Non-Animal Educational Methods in U.S. Medical Schools

In the early 1990s, medical schools began rapidly replacing the use of animals for medical education with non-animal teaching methods.

Currently, the use of animals for all medical school educational courses has been eliminated by about 90 percent of U.S. medical schools. The use of animals specifically to instruct physiology courses (the current practice at NYMC) has been eliminated by 93 percent of U.S. schools (117 of 125), including 19 of the top 20 ranked schools.⁵ NYMC is the only medical school in New York state that continues to use animals to teach its students.

This change has been facilitated by the development, validation, and implementation of excellent non-animal educational alternatives (such as lifelike simulation models, computer-based learning methods, and interactive virtual reality programs), and by the progressive refinement of medical school curricula to emphasize human-based learning and ethics in medical education. Many medical simulation center directors, medical school curriculum and course directors, and other medical education professionals are on record supporting the educational, ethical, and economic advantages of human simulators and other non-animal teaching alternatives.

Modern simulator and computer technologies provide excellent and clinically relevant teaching in physiology and pharmacology. The METI Human Patient Simulator (HPS) is a programmable and interactive lifelike simulator that accurately mirrors *human* responses to a variety of physiological situations, including intravenous administration of more than 90 drugs. HPS facilitates repetition, iterative learning, and immediate feedback and correction in safe but true-to-life scenarios, all of which are important for optimal physiology education and not possible using live animals.

Human simulators are just one of several widely adopted alternatives to animal use. In many top-ranked medical schools, physiology instruction is focused on didactic teaching, class and small-group case discussions, standardized patient exercises, interactive computer-based methods such as virtual reality programs, and hands-on

mentorship opportunities with faculty in anesthesiology, surgery, emergency medicine, and other clinical disciplines.

In response to a recent survey,⁶ the curriculum office of a top-five-ranked U.S. medical school wrote the following:

. . . It has been a decade since we used animals in the lab. As there are very few individuals left who teach that remember using animals, there have not been any concerns with not using animals. Our curriculum is very successful, providing our students with a strong foundation without using animals.

Some of the country's most highly regarded medical schools stopped using animals in their undergraduate curricula more than a decade ago. Yet these schools continue to be highly ranked year after year, making it clear that the use of non-animal alternatives has not impaired the quality of medical education provided by these schools.

III. The Campaign to Replace Animal Use at New York Medical College

The Physicians Committee for Responsible Medicine (PCRM) has worked with medical schools for more than a decade to help them eliminate the use of animals to teach their students. These efforts have included outreach to NYMC.

More recently, in February 2006, PCRM sent a letter to NYMC medical physiology course director Francis L. Belloni, Ph.D. This letter explained the benefits of replacing animal use for physiology teaching, and asked NYMC to incorporate this change into its curriculum. This was followed by a letter dated March 3, 2006, to NYMC Executive Vice Dean for Academic Affairs Susan A. Kline, M.D. PCRM did not receive any responses to these letters.

PCRM then sent a letter dated May 27, 2006, to

NYMC Institutional Animal Care and Use Committee (IACUC) chair Alberto Nasjletti, M.D., requesting that this oversight body deny the use of animals to teach physiology due to the availability of equivalent or superior non-animal alternatives, as required by the federal Animal Welfare Act (AWA). PCRM received no reply from Dr. Nasjletti.

On June 7, 2006, PCRM filed a complaint with the Animal and Plant Health Inspection Service (APHIS) of the USDA, requesting an inspection to determine if the NYMC IACUC was noncompliant with the AWA in its approval of this animal use. That inspection was performed June 21, 2006, and found the NYMC IACUC in noncompliance with its responsibility to require adequate justification for animal use in the physiology course.

In March 2007, PCRM sent a letter to NYMC School of Medicine Dean Ralph A. O'Connell, M.D. This letter informed him of the recent resolution passed by AMSA and stated:

Not only are excellent alternatives available, they have been adopted by more than 85% of your peers. The rationale your faculty has presented for continuation of the dog lab has of course been considered, and has been rejected as inadequate reason to continue such labs, by these same peers.

Further criticism of NYMC's use of live animals has come from local columnist Noreen O'Donnell, whose commentaries in *The Journal News*—in both print and online editions—have consistently condemned the use of live animals.⁷ O'Donnell has written that, “this is about training medical students, and with so many schools using simulators, how do you justify killing these dogs?”⁸

On June 20, 2007, the Health Law Committee and Legal Issues Pertaining to Animals Committee of the Association of the Bar of the City of New York sent a letter to NYMC condemning the school's use of live animals in

medical education.⁹ The language in this letter is now the official position of the bar association regarding live animal use in medical schools. The letter states:

We strongly urge you to comply with the terms of the AWA, to modernize your curricula, and to be responsive to the mission and the sentiments of the very students who you train and, therefore, to immediately cease using live animals as teaching tools.

Thus far, NYMC administration has refused to require the replacement of dogs for the 2007-2008 physiology course. The medical college's “Statement on the Use of Animals in Medical School Education” asserts:

The use of live animals in teaching exercises is part of an effort to educate physicians to better understand living systems so that they may provide competent and compassionate care to human patients.¹⁰

NYMC claims its live animal labs are necessary to educate “competent and compassionate” physicians, yet the school's own students are allowed to opt out of animal use. No objective information has been presented suggesting that NYMC graduates are equivalent or superior to graduates of schools that do not use animals, a point that in any case is refuted by past and current published medical school rankings.¹¹

There are also no reported data comparing the performances of students who participate in the animal lab with those who opt out, or even surveys of graduates in practice to determine if in retrospect this animal lab contributed in any substantial manner to the quality of either their medical education or their professional skills and competence. The absence of supporting data or documentation makes the administration's claim of educational necessity groundless. And exactly how “compassion” is taught by the needless terminal exercises performed on dogs remains unclear.

IV. Current Source of Dogs for Physiology Instruction at New York Medical College

Dogs used for physiology instruction at NYMC are purchased from a Class B animal dealer. Class B animal dealers are brokers who sell animals to research facilities, veterinary schools, or medical schools such as NYMC. They acquire these animals from a variety of sources, including their own breeding facilities, other breeders, and animal shelters and pounds. They also obtain animals from so-called “bunchers,” who are notorious for collecting animals from flea markets, newspaper ads, adoption events, and other venues, often under false pretense of providing homes for them. Bunchers also are known to acquire animals by collecting strays and stealing animals from yards, and to provide Class B animal dealers with falsified paperwork to meet federal requirements for documentation of sources.

Of the more than 2,000 Class B dealers selling live animals to research and educational facilities such as NYMC, only 15 sell random source animals. The number of random source dealers has declined from more than 100 over the past 13 years, and three of the remaining 15 dealers are under investigation by the USDA for possible illegal activities.¹² Some of the USDA investigations and subsequent actions have been widely and critically reported, including the exposure of the sordid practices of Class B animal dealers in the acclaimed 2006 HBO documentary, *Dealing Dogs*.

NYMC’s Class B random source animal dealer is Chestnut Grove Kennel of Shippensburg, Pa.⁴ Chestnut Grove Kennel is owned by Floyd and Susan Martin. Since receiving their Class B license from the USDA in 2005, the Martins have been cited for numerous violations of the AWA. These violations include at least four instances of unsafe animal facilities and at least one instance of failure to make a responsible person available for an inspection.¹³

Class B animal dealers and bunchers are so

inextricably linked with animal cruelty and illegal practices that federal legislation is pending that would prohibit U.S. research facilities and institutions from obtaining animals from random source animal dealers. The *Pet Safety and Protection Act of 2007*,¹⁴ proposed in the U.S. Senate (S. 714) by Sen. Daniel Akaka (D-HI), and in the U.S. House of Representatives (H.R. 1280) by Reps. Michael Doyle (D-PA) and Phil English (R-PA), has been adopted in the House version of the 2007 Farm Bill. Sen. Akaka has stated:

...some Class B, or ‘random source,’ dealers have resorted to theft and deception to collect animals for resale. In many instances these animals were found living under inhumane conditions.

Another notorious method of Class B random source dealers is the acquisition of animals by means of pound seizure. This practice, whereby animals in shelters and pounds are sold to research and educational institutions and Class B random source dealers, has been universally decried by animal welfare organizations. It is outlawed in 13 states—including New York—and many cities and counties in other states. Where pound seizure persists, animals become revenue sources for shelters and pounds. Increased rates of animal theft, missing pets, and illegal brokering of animals by shelters and pounds occur. Studies in New Mexico and Washington, D.C., have confirmed that such pound release practices measurably erode public confidence in animal control facilities,¹⁵ resulting in increased animal abandonment and stray animal populations.

The AMSA House of Delegates resolution also clearly affirmed the organization’s opposition to the practices of pound seizure and obtaining animals from Class B random source dealers such as Chestnut Grove Kennel. The resolution states that AMSA “condemns the use of household pets (e.g., cats and dogs) from pounds, shelters and Class B random source animal dealers.”¹

Pound seizure refuses dogs the opportunity for adoption or for at least a peaceful death rather than the fear, mistreatment, and suffering that occur when they become sacrificial animals used for medical student experimentation. NYMC's support of Class B animal dealers contributes either directly or indirectly to the persistence of pound seizure.

V. Conclusion

NYMC should immediately eliminate the use of animals to teach physiology to medical students.

The use of human simulators, computer-based interactive learning, didactic and case-based teaching, mentoring by medical school faculty, and many other methods provides a validated equivalent or superior educational experience for medical students. The success of these teaching methods is irrefutably confirmed by long application at the highest ranked U.S. medical schools, including 19 of the 20 top ranked schools and about 90 percent of all U.S. medical schools.⁵

Whether considering the availability of suitable alternatives, current educational standards of practice, regulatory guidance, medical ethics, or economic impact, the choice for NYMC should be the use of non-animal methods rather than live animals to teach medical students.

References

¹ See Principle 6.a of AMSA Principles Regarding Vivisection in Medical Education. Available online at <http://www.amsa.org/about/ppp/vivi.cfm>.

² At a Jan. 26, 2006, discussion held at NYMC regarding the dog lab, faculty stated that nine dogs are used each year.

³ At the dog lab discussion on Jan. 26, 2006, course director Francis L. Belloni, Ph.D. stated that students could learn the information without attending the dog lab. This is reinforced by the fact that NYMC students are allowed to opt out of the lab.

⁴ In July 2007 PCRM obtained documents from the New York State Department of Agriculture and Markets

through a Freedom of Information request indicating that Chestnut Grove Kennel (USDA License No. 23-B-0174) of Shippensburg, Pa. sold dogs to NYMC as recently as December 2006.

⁵ "America's Best Graduate Schools 2007" by *U.S. News & World Report*. Only Washington University (St. Louis) among the top 20 schools uses animals to teach physiology.

⁶ In September 2006, PCRM sent surveys to the top 20 ranked U.S. medical schools that no longer use live animals in their medical student curricula.

⁷ O'Donnell's column published in *The Journal News* criticized NYMC's use of live dogs on Aug. 14, 2006 and Sept. 2, 2006.

⁸ This comment appeared in Noreen O'Donnell's Aug. 14, 2006 column.

⁹ The letter was signed by Joyce Tichy, chair of the Health Law Committee, and Jane Hoffman, chair of the Legal Issues Pertaining to Animals Committee.

¹⁰ This statement is dated March 2004.

¹¹ "America's Best Graduate Schools 2007" by *U.S. News & World Report*. NYMC is unranked in both categories—"Top Medical Schools – Research" and "Top Medical Schools – Primary Care."

¹² Source: Last Chance for Animals. Available at http://www.lcanimal.org/cmpgn/cmpgn_dog_theft.htm.

¹³ USDA inspection reports available from PCRM.

¹⁴ Pet Safety and Protection Act of 2007 (S. 714). See full text at <http://thomas.loc.gov/cgi-bin/thomas>.

¹⁵ Data available from PCRM.

Appendix A

Frequently Asked Questions: Animal Use in Medical School Education

Q: *Isn't using animals to teach medical students about anatomy, physiology, surgery, and other topics a widely accepted and routinely used method?*

A: No. Beginning in the early 1990s, the development and adoption of superior educational methods led to the replacement of animal use in many U.S. medical schools. That process has continued to the point that today animals are used in only a small number of medical schools.

Q: *How many U.S. medical schools still use animals and how many use non-animal teaching methods?*

A: Of the 125 allopathic and 27 osteopathic medical schools in the United States, about 90 percent have eliminated the use of animals for all medical student courses as of 2007. All the remaining schools have only one or very few animal lab courses, and the number of schools still using animals continues to decline each year.

Q: *Don't medical students have to see and experiment with complex living systems in order to learn how the human body works?*

A: Not necessarily, but when this is the chosen method it should be taught using humans or lifelike human simulators as teaching tools, rather than animals with different anatomy and physiology. Such human-based teaching occurs routinely in medical schools in the form of anatomy classes, observed surgeries and other patient procedures, and mentored experiences with clinical faculty. Many schools use human simulators, computer-based learning, didactic teaching, case discussions, and standardized patient exercises for this purpose.

Q: *What non-animal alternatives are available?*

A: Excellent validated and widely adopted alternatives are available for teaching all aspects of medical education previously taught using animals. High fidelity, lifelike, and programmable human simulators are now a mainstay of medical education at many U.S. medical schools. Computer-based learning such as interactive basic science and clinical programs, including virtual reality applications, are used to teach everything from basic anatomy and physiology to complex laparoscopic surgery techniques. Didactic teaching methods, class

and small-group case discussions, standardized patient exercises, observed surgeries, faculty-mentored hands-on training, and many other progressive educational methods have all replaced the use of animals.

Q: *Is the quality of medical school education affected by using non-animal alternatives?*

A: Yes—it's better. Comparative studies show that both students and instructors prefer simulation-based education to the use of animals. Student test scores are equivalent or superior when non-animal methods are used, and student skills testing is improved by using simulation methods compared with using animals. Medical school course directors, curriculum directors, simulation center directors, and other education professionals are on record supporting animal replacement by non-animal alternatives.

Q: *Isn't it necessary to use live animals to show how the human body responds to drugs?*

A: No. Programmable human simulators that demonstrate *human* responses to dozens of drugs are far better than using anesthetized animals to learn *animal* responses to only a few drugs. And the lessons can be repeated as needed when simulators are used. Many schools also teach drug responses with case discussions, interactive computer programs, and experiences with anesthesiologists during surgeries, where real-time responses in real people can be observed.

Q: *Isn't it necessary to use live animals to teach surgery techniques to medical students?*

A: No. Many specially designed simulators are available to teach surgery skills ranging from suturing to laparoscopic surgery. Open surgery techniques are taught during surgery rotations, under the hands-on guidance of

faculty and staff. In fact, the American College of Surgeons has instituted a surgery curriculum reform initiative that eliminates the use of animals even in surgery training programs. This reform is endorsed by the Accreditation Council for Graduate Medical Education. If surgeons in subspecialty training don't need to use animals, medical students certainly don't.

Q: *Don't graduates of schools that use animal labs become better doctors and surgeons than those trained at schools that only use non-animal methods?*

A: No. Even schools that use animals allow students to opt out of those labs, and studies have shown that students who opt out test as well as those who participate in the labs. The highest ranked U.S. medical schools have almost all eliminated animal use, yet these schools continue to be highly ranked every year.

Q: *Doesn't the faculty know the best way to teach medical students? Why would they use animals if this wasn't the best way to teach?*

A: For various reasons, some faculty members are unaware of or uninterested in available alternatives to the use of animals in their courses. In these instances, they likely are not up to date regarding the best way to teach medical students.

But in general, faculties probably do know the best ways to teach medical students—and faculties in about 90 percent of U.S. medical schools have decided that animal use is neither essential nor preferred. In other schools, reluctance to change is often based on institutional inertia, lack of knowledge or skills regarding alternatives, unwillingness of basic science instructors to learn new methods, and economic or logistical issues.

Q: *Don't medical students enjoy learning by using live animals?*

A: Some do, some don't, and some are neutral. For those who like the animal labs, it is often due to the “wow factor” of their first exposure to live anatomy and physiology. But studies show that when given the opportunity to compare the learning experiences of animal labs and computer- or simulation-based teaching, students choose the non-animal alternative teaching methods as the better learning experience.

Q: *Isn't it true that when students may choose whether to attend an animal lab or opt out, most students decide to attend the lab?*

A: This is generally true, but the reasons are often unfortunate. The “wow factor” of live animal dissection is attractive to some students, but most choose the animal lab because they are offered no educational alternatives, because those alternatives are badly designed afterthoughts, because there is peer group or faculty pressure, or because they fear being at a disadvantage for exams or course evaluations. Again, when allowed to compare animal labs to computer-based learning or simulators, most students prefer the non-animal alternative methods.

Q: *What's the harm in using dogs who will be killed in the shelter or pound anyway?*

A: There are several problems with this thinking. While it's true that some of the dogs used in animal labs would die anyway, controlled euthanasia is much preferable to the mistreatment, fear, pain, and suffering animals experience in labs. Also, many of these dogs would be adoptable, but they never get the chance. The practice of pound seizure also erodes confidence in animal shelters and pounds that use this practice, and has been shown to increase animal theft, lost pets, and the illegal sale of impounded

animals in communities. Finally, the source of dogs does not address the issue at hand: Animal use is neither essential nor desirable to teach medical students.

Appendix B

Comments from Education Professionals and Physicians (Including NYMC Graduates) on the Use of Live Animals for Medical School Education

- In response to a 2006 survey regarding the experiences of medical schools that had eliminated animal labs, Cornell's Weill Medical College (ranked #15 among U.S. medical schools) stated that the discontinued use of animals has had no adverse effect on medical student education. Here is what was written on the bottom of the survey: "This change was made more than 10 years ago; students and faculty have adjusted. Student performance outcomes remain excellent."
- Also in response to that survey, a curriculum administrator at the University of Pennsylvania (ranked #3 among U.S. medical schools) stated: "Our curriculum is very successful, providing our students with a strong foundation without using animals."
- Martin Eason, M.D., director of the Patient Simulation Laboratory at East Tennessee State University Quillen School of Medicine, stated in April 2006: "These tools are so much better than using animals that no schools should be depriving their students of them."
- Adam Levine, M.D., director of the Simulation Center at Mount Sinai School of Medicine, stated in December 2005: "I am a

strong opponent of the use of animals for education and say so openly. As a medical student at Mount Sinai from 1985-1989, I myself refused to participate in the dog lab component of the physiology curriculum. The three simulator labs that I created and conduct are mandatory and were created and conducted as alternatives to the elective pig lab."

- An e-mail from the curriculum office of a New York medical school stated: "After an extensive nationwide survey of medical schools we determined that virtually every school in the U.S. had abandoned those experiences, instead opting to use human simulators or standardized patient exercises to teach fundamental physiological principles to pre-clerkship students. Only three of 126 schools [sic] still use some form of live animal experimentation. Most of the schools that we interviewed had determined that the educational value was limited and did not warrant the tremendous investment of resources."
- Philip Padrid, D.V.M., and associate professor of medicine at the University of Chicago Pritzger School of Medicine, wrote in a letter dated Dec. 26, 2000: "Until 1996 I participated as a faculty member in the demonstration of general cardiovascular physiology principles to 1st and 2nd year medical school students at the Pritzger School of Medicine. Live dogs were anesthetized, instrumented etc (you know the drill), and sacrificed at the end of the lab. In 1996 one of my colleagues wrote and instituted into the course a computer simulation program to mimic the various principles that were previously demonstrated using dogs. The students were required to participate in the live dog lab and the computer simulation, at the end of the course the students were required to evaluate both approaches. By a clear majority, the students felt the computer simulation was

superior in all important didactic categories. As a direct result of their input we stopped using live animals in this laboratory, and the computer simulation is now routinely and exclusively used in this lab.”

- Kathleen Norman, M.D., a 1990 graduate of New York Medical College, recently stated: “I refused to practice on live animals when I was in medical school. This had no adverse impact whatsoever on my medical education nor my practice at any time.”
- In January 2007, anesthesiologist and pain management physician Daran Haber, M.D., stated: “There are absolutely better methods available than using animals for medical education. As a medical student in the 1980s live animals were not part of my education. There is no part of my medical practice as an anesthesiologist which is dependent upon or was improved by animal-based teaching.”
- Margaret E. Stevens, M.D., a 1954 graduate of NYMC, recently stated: “As an alumnus of New York Medical College and retired pediatrician I can safely say that using live animals to teach human physiology is an inferior and inhumane practice. I hope NYMC will join schools like Columbia, Yale, and Stanford in doing away with its live animal lab. It would make me very proud.”