

Chapter Seventeen

One Health

In the 19th century most schools of veterinary medicine were located in urban centers, associated with or at least in geographic proximity to places where physicians trained and did research. At some universities—Harvard, New York University and George Washington University—veterinary medical colleges were actually branches of the medical school.

◆ Sometimes physicians treated animals.

◆ Sometimes the deans of veterinary medical colleges were physicians.

◆ Sometimes medical and veterinary medical school students took the same basic science classes. This was true at the University of Pennsylvania colleges of medicine and veterinary medicine as late as the early 1960s.

By the end of the 19th century, veterinarians had earned a respected place in the community. Physicians and veterinarians worked together on diseases and public health issues of the day. Both disciplines recognized that humans and animals were dependent upon one another to thrive and that threats to one group could have an adverse impact on the other. In the second half of the 20th century, this collaborative understanding came to be known as “One Medicine.”

By 1910 there were approximately 11,500 veterinarians, most located in cities where hun-



Dr. James H. Steele, ca. 1975.

Photo courtesy of Dr. Craig N. Carter.

dreds of thousands of horses formed an intricate network for transport of people and goods. In those days the horse was king. The young man taking his sweetheart for a Sunday drive, the grocer delivering his goods, the fire brigade, the traffic cop, the doctors of medicine and veterinary medicine, the undertaker—all relied on horse power to fuel the commerce of daily life. And then came the automobile.

In 1922, cautioned *Veterinary Medicine* magazine, “Veterinary schools

will be the foundation of our future just as they have been the foundation of our past. We should guard against all influences within and without the profession that would tend to destroy or weaken them.” This call to action was not without merit, for forces were at work that would change the very nature of veterinary medical education, perhaps forever. As more and more individuals and businesses relied on motorized transport, far fewer horses were needed. And with their departure, far fewer veterinarians. Practices closed. Veterinary medical school enrollment plummeted 80 percent. Veterinary medical colleges in urban centers, most of which were private institutions, shut their doors.

Veterinary medical education soon became primarily within the province of land grant universities, a group of institutions (one per state) established under Abraham Lincoln by the Morrill

Federal Land Grant Act of 1862. Veterinary medical colleges at these institutions, which had been chartered “to teach such branches of learning as are related to agriculture and the mechanical arts,” focused on agricultural animals, and because veterinary medical schools were now located far from urban centers, the links between institutions of higher learning for veterinary medicine and human medicine were, for the most part, broken.

In the ensuing years, some physicians used dogs to advance their knowledge of medicine, with the result that they developed important surgical and medical techniques for animals independently of veterinarians (e.g., the discovery of insulin for treating diabetes mellitus by Drs. Fredrick Banting, MD; Charles Best (medical student); J. J. R. Macleod, MD; and James Collip, PhD. Veterinarians, meanwhile, worked to ensure the safety of the food supply and prevent the spread of zoonotic diseases such as rabies, but the knowledge they gained was not fully known or appreciated by the human medicine community.

There were and are now many exceptions. In the early 1940s Dr. Otto Stader, a veterinary orthopedist, developed a stabilizing device to hold canine fractures in place while they healed. Stader’s technique was later used for trauma care in humans during WWII. And in 1947, veterinarian Dr. James H. Steele, an early advocate and practitioner of One Health interdisciplinary/multidisciplinary principles, founded the veterinary division of the U.S. Communicable Disease Center (now the Centers for Disease Control and Prevention) and introduced the principles of veterinary public health to the world. Shortly thereafter, veterinarians were officially included as a part of the U.S. Public Health Service.

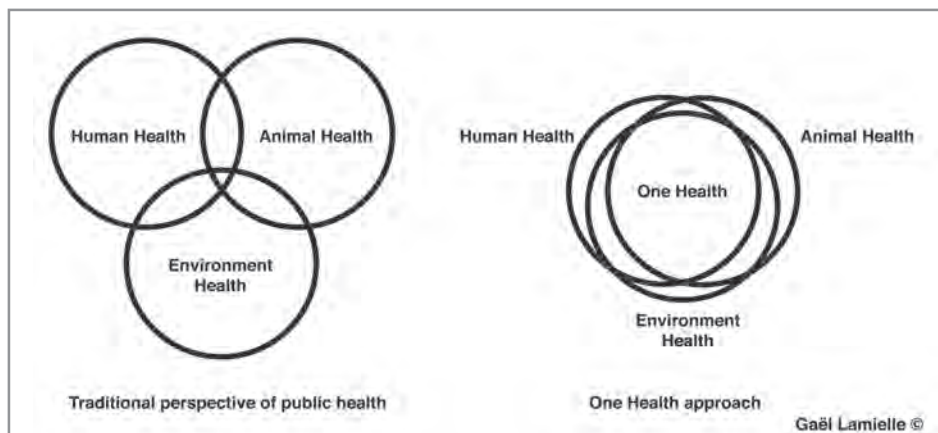
Dr. Steele, who received his DVM from the College of Veterinary Medicine at Michigan State University in 1941 and a Masters in Public Health (MPH) from Harvard in 1942 (where he was the only veterinarian in a class of physicians), is recognized by many as the “father of veterinary public health.” Here he’s shown working in the brucella lab at Michigan in 1941.



Dr. James H. Steele.
Photo courtesy of Craig N. Carter

Today, at the age of 98, he continues to lecture on the role of veterinary medicine in the public health arena. In 2009 veterinarian Dr. Craig N. Carter, Director of the University of Kentucky Veterinary Diagnostic Laboratory, wrote a biography of Dr. Steele titled *One Man, One Medicine, One Health: The James H. Steele Story*.

Another mid-20th-century pioneer of the “One Medicine” philosophy—in fact, the man credited with coining the term in his 1984 book, *Veterinary Medicine and Human Health*—was Dr. Calvin W. Schwabe. Dr. Schwabe, who passed away in 2006, received his DVM from the Alabama Polytechnic Institute (now Auburn University) in 1954 and went on to earn an MPH in tropical health and a ScD in parasitology and public health. Throughout his life he worked tirelessly to promote recognition, as he put it, that “[t]he critical needs of man include the combating of diseases, ensuring enough food, adequate environmental quality, and a society in which humane values prevail.”



Courtesy of Dr. Gaël Lamielle.



The One Health Initiative (www.onehealthinitiative.com) provides a comprehensive reference source for current national and international news, publications and events of interest to the global One Health community.

The work of visionaries like Steele and Schwabe began to slowly influence veterinary medical and medical school curricula and public policy, as well as the approach to research of both groups. Among the many One Health research models in the early 21st century, veterinarian orthopedist Dr. James L. Cook and physician orthopedist Dr. Sonny Bal at the University of Missouri have collaborated for over eight years on efforts to develop knee and hip replacements for humans and animals. Indeed, Dr. Cook's original development of using laboratory-grown cartilage for knee and joint replacement in dogs is being studied by Cook and Bal for adaptation to humans.

Over the past 60 or 70 years, it has been recognized that approximately 75 percent of recently emerging infectious diseases that affect humans are diseases of animal origin, and about 60 percent of all human pathogens are zoonotic. Examples include the West Nile virus outbreak in 1998, SARS (severe acute respiratory syndrome), H1N1 influenza and other zoonotic menaces. This phenomenon highlighted the importance of health scientists (veterinarians, physicians, etc.) working together as co-equal teams. Dealing with the implications of this information requires nothing less than a holistic, collaborative approach among all scientific disciplines involved.

As the One Medicine movement has evolved, most people in the 21st century call it "One Health," a term that more fully acknowledges the role played by a healthy environment in the well-being of humans and animals. As defined by the One Health Initiative, "The One Health concept

is a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment."

The American Medical Association (AMA) and American Veterinary Medical Association (AVMA) established a unique, modern-day one-health liaison in 2007. The AMA adopted a One Health resolution in June 2007; the AVMA passed a similar resolution in July 2008.

Practicing veterinarians are in an excellent position to support this concept by educating pet owners about how to help keep their animals healthy as a means of preventing transmission of diseases transmissible from animals to people (zoonoses) and by serving as knowledgeable zoonotic disease and scientific resources for local health departments and practicing physicians.

Based on his many years of public health experience, Dr. Steele is quick to remind us that "good public health is dependent on good animal health." He also proposes that "good public health plus good animal health equals good economic health."

The containment or elimination of common zoonotic diseases alone could put untold dollars into the economies of countries around the world, says Dr. Steele. In these difficult economic times, One Health offers a message our troubled planet should be ready to hear.

Suggested Reading:

<http://www.worldvet.org/node/7316>

<http://www.avma.org/onlnews/javma/jan09/090115d.asp>

http://www.izs.it/vet_italiana/2009/45_3/377.htm

[http://www.amjmed.com/article/S0002-9343\(07\)01082-0/fulltext](http://www.amjmed.com/article/S0002-9343(07)01082-0/fulltext)