Symposium: Public health in the new millennium

Introduction

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Historically, veterinary medicine has made its greatest contributions in the public sector and in settings other than direct care of the individual patient. So why are so many of us unaware of our profession’s achievements in this arena?

My introduction to veterinary preventive medicine and public health was through military service. My obligation to serve a two-year doctor draft in the United States Air Force became an adventure for my family and me, rather than an unwelcome intrusion on my ultimate desire to return to private clinical practice. The operative words are private and clinical. Why was I unaware of the opportunities available to those of us educated in this discipline sometimes referred to as comparative medicine?

C. W. Schwabe, in the second edition of Veterinary Medicine and Human Health, quotes Rudolf Virchow: “Between animal and human medicine there is no dividing line—nor should there be. The object is different but the experience obtained constitutes the basis of all medicine.”

On July 23, 2000, a symposium titled “Public health in the new millennium” was held during the 137th AVMA Annual Convention in Salt Lake City to celebrate the first 50 years of the American College of Veterinary Preventive Medicine. Prominent, well-known individuals in the field of preventive medicine shared their perspectives on the past, current, and anticipated contributions of veterinarians to this important medical field.

During the symposium, we learned from the past. Jim Steele, former Assistant Surgeon General for Veterinary Affairs, offered his folksy reminiscence of the origins of veterinary public health in the United States Public Health Service, which served to remind us that individuals can make a difference. Retired Brigadier General Tom Murnane’s articulate recollection of the initial organizing efforts for the American Board of Veterinary Public Heath and the American College of Veterinary Preventive Medicine reminded us that groups of people sustain individual efforts.

We also learned from today. Current leaders in federal agency efforts reminded us that opportunities abound. It is the year 2000, and emerging infectious diseases of animal origin are major agricultural, animal industry, and public health challenges.

We reaffirmed that we must learn for the future. During the symposium, we were reminded that, although lists of preventive medicine and public health achievements can be enumerated, the past is the prologue to the future.

Drs. Steele and Murnane and several other speakers at the symposium offered to share their perspectives with the entire veterinary community through the Journal of the American Veterinary Medical Association. I hope the following articles convince you, members of the veterinary profession, that there is only one medicine.

References


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The history of public health and veterinary public service

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Animal diseases are believed to be the origin of many human diseases. Jared Diamond states, "Infectious diseases like small pox, measles, and influenza arose as specialized germs of humans, derived by mutations of very similar ancestral germs that infected animals." These emerging diseases appeared about 10,000 years ago after the humans changed from being hunters to farmers with animals in their midst. He contends that the people who domesticated the animals were the first to be victims. Those humans then developed resistance to the zoonotic diseases where agriculture developed.

The relation of animal disease to human disease was observed in the ancient civilizations of Babylon, the Nile Valley, and China. Later, they were described by Leviticus in the Old Testament, by Hippocrates in Greece, and by Virgil and Galen in Rome. In the Middle Ages, rats carried the plague that killed millions of people across Europe. The invasion of Europe by rinderpest in the 18th century disrupted commerce and government. The Papal authority created a medical commission to advise the Vatican on what measures should be taken to control animal plague and rinderpest.

The movement of animal diseases into the Americas is believed to have first occurred when livestock were used to help create the settlements founded in Santo Domingo, Dominican Republic, by Christopher Columbus in 1493. In the next century, Hernando de Soto, the Spanish explorer of Florida and the southeast, brought cattle, horses, swine, and dogs. Further north, the Virginia colonists brought animals to Roanoke Island, but neither humans nor animals survived. Later, the Jamestown colonists imported domestic animals that survived and became valuable foundation stock. Rabies was the first zoonotic disease recorded in Virginia in 1753, and later as an epizootic in the colonies and the Federation of States in the late 18th century.

In 1798, editors of the newly founded Medical Repository were the first to inquire about emerging diseases in the United States and territories. They asked for information on human diseases, diseases among domestic animals, accounts of insects, the condition of the vegetation, and even the state of the atmosphere. They hoped to put the facts together as an annual report on the status of health in the United States. In his address at the AVMA centennial, Surgeon General Luther Terry of the United States Public Health Service (USPHS) called that report the first reference of veterinary medical support of the public health. A few years after the report was written, Benjamin Rush called for the establishment of veterinary medical education at the University of Pennsylvania.

The United States Sanitary Commission, which was organized during the Civil War by public spirited women, was largely concerned with sanitary conditions and food hygiene. The commission was the first to call attention to putrid meat, and later embalmed beef sent to the Army. In the years following the Civil War, the commission was to be a forerunner of public health service.

In the 1870s, there was interest in developing a national health service. Yellow fever epidemics were frightening as they spread up the Mississippi River from New Orleans. The possibility that yellow fever involved animals brought Professor John Gamgee, a famous veterinarian from Germany, to investigate the epidemic. He recognized a seasonal occurrence (cold weather stopped the epidemic) and suggested traffic be limited to the colder months. He failed to associate the effect of cold weather on mosquitoes, the vector of virus that causes yellow fever.

The United States Board of Health came into being largely because of the morbidity and mortality caused by the yellow fever epidemic. At the same time, malaria was widespread in the south, tuberculosis was a recognized disease, and typhoid fever and enteric diseases were common. Animal diseases were of concern, especially the spread of glanders and anthrax that followed the Civil War.

In 1879, the president of the United States Board of Health, Dr. J.L. Cabell, asked James Law, a professor of veterinary medicine at Cornell University, to advise the board on how they should supervise diseases and movements of domestic animals. Law's report was the first comprehensive recognition of the importance of zoonotic diseases to the public health published in the United States. The two-part report describes the animal diseases that are directly communicable to humans and plagues that affect only animals.

Further discussion of the organization of public health service in the post–Civil War period was reviewed by W.D. Miles, the former historian of the National Institutes of Health. Miles discussed the struggle between interests in public health and agriculture in the decade leading up to the inauguration of the Bureau of Animal Industry in 1884. The bureau's initial interest was to protect animal health, but later provided a meat inspection service for public health, international trade, and interstate commerce.

The Relation of Animal Diseases to the Public Health and their Prevention, by Frank S. Billings, was the first book to review this subject as well as the state of bacteriology and parasitology in the 1880s. It is limited as to the diseases he writes of: trichinosis, hog cholera, tuberculosis, anthrax, Texas fever, rabies, and glanders. His knowledge of these diseases was remarkable for the time. He observed veterinary activities while he traveled in Europe. While obtaining an education in Berlin, he learned about the history of animal diseases

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in the Greco-Roman period. He states that the Latin origin of the word “veterinarian” first appeared in the fourth century writings of Vegetii.

Billings made a strong plea for the development of veterinary public health to control the animal diseases that affected humans. He believed it was essential to have scientifically educated veterinarians. He was one of the veterinarians active in the early years of the American Public Health Association. During meetings, there were discussions about trichinosis and other animal diseases. Billings also pointed out that milk from diseased cows was dangerous. He appealed to the government to set up laboratories to use the new science of bacteriology to find the cause of illness of milk origin. Billings was a visionary of veterinary public health.

Pasteur changed science and veterinary medicine. He created a new concept of the origin of disease. No longer would myth and spontaneous origin of disease guide society, even though there were as many objections to scientific advances then as now. The 19th century saw the first successful work by Pasteur for the development of vaccines. Pasteur was a chemist who discovered the cause of fermentation and applied it to the beer and wine industries, which led to milk pasteurization. He was known to the Impressionists of the 19th century because he helped prepare better paint colors. Pasteur was a genius who gave public health the science and vaccines to combat 19th century diseases and prepare his followers for the 20th century’s emerging problems.

The frightful toll of milk-borne disease is reviewed by E. Stenn. He cites the shocking figure of 400 deaths per 1,000 births in New York City in 1880. Spoiled milk accounted for the deaths of thousands of children in the early 1900s. In 1905, a milk-borne typhoid epidemic in Washington, DC, caused President Theodore Roosevelt to order the USPHS to investigate the local supply. Surgeon general Walter Wyman ordered his staff to examine not only the Washington milk problem but also the national milk problem. In 1905, E. Stenn published a study of the bacterial causes of abortion in animals in the Journal of Comparative Pathology and Bacteriology. He assembled and trained a great staff including Theobald Smith, V.A. Moore, and E.C. Schroeder. The start of the 20th century was great interest in comparative medicine by pathologists, which was led by Karl F. Meyer, a Swiss veterinarian who was to become one of the outstanding leaders and scientists of the 20th century. He was among the early veterinary public health scientists to delve into virology when he was a professor of pathology at the University of Pennsylvania Veterinary Faculty. In 1913, he may have been among the first to recover a virus causing equine encephalitis. As director of the Pennsylvania Livestock Sanitary Board Laboratory, he published information on glanders, anthrax, anaplasmosis, sporotrichosis, paratuberculosis, and septicemia among many other diseases of animals. In 1914, he left the University of Pennsylvania to accept a position at the University of California newly established medical center. The following year, he accepted an appointment at the George Williams Hooper Foundation for Medical Research at the University of California Medical Center where he would remain the rest of his life. He became a legend there. His lectures introduced medical students to zoonoses, plant life, the atmosphere, and all that is called the environment today.

At Hooper, Meyer performed research on the animal diseases of public health importance. He continued his virus research and was active in the investigation of human influenza from 1918 to 1920. He went into the field to define the epidemiologic characteristics of malaria, dysentery, and even dental diseases. His study of the bacterial causes of abortion in animals resulted in grouping Brucella abortus, Brucella melitensis, and Brucella suis in a new genus honoring David Bruce. Another important event was his report on Bacillus botulinus in nature. Botulism became a national concern in the 1920s when California canned fruit.
and vegetables were found to contain botulinus toxin. The industry asked him to resolve the problems and he undertook a laboratory to maintain surveillance. Meyer was active in food safety for the remainder of his life.

In 1933, Meyer and his long-time lab associate, Bernice Eddie, began their series of reports on psittacosis in birds, which eventually led to control of the disease 30 years later by feeding seeds impregnated with tetracycline. The same antibiotic is used to prevent ornithosis in domestic fowl.20

One of Meyer's memorable lectures was in 1931 when he called to attention the importance of the animal kingdom as a reservoir of diseases that endanger the health and welfare of people throughout the world.19 In 1954, he had the opportunity to review animal reservoirs of diseases, by then referred to as zoonotic diseases, before the World Health General assembly. He repeated the same theme before the World Health Organization (WHO) Expert Committees for Zoonoses, Plague, and Food Hygiene and for the Pan American Health Organization (PAHO) until his 90th year.

Meyer's work on plague was reported in the special supplement of the Journal of Infectious Diseases to commemorate his 90th birthday, which he failed to reach by one month. This was underwritten by Max Stern, president of Hartz Mountain. Hartz Mountain played a major philanthropic role in supporting investigations of psittacosis control at the Hooper Foundation.20

Larry Altman, the medical editor of the New York Times, wrote a lengthy obituary from which the following excerpt is taken:21

Dr. Karl Friedrich Meyer was regarded as the most versatile microbe hunter since Louis Pasteur and a giant in public health.

As a youth in Basel, Switzerland, pictures of the Black Death, or plague, so fascinated him that he became an outdoor scientist instead of following in the aristocratic business world in which he grew up. He told friends that in choosing to become a veterinarian he could be a universal man and study all diseases in all species.20

Public health leaders yesterday called his contributions to medicine 'monumental.' His scientific work had such broad implications that it touched on virtually all fields of medicine.

The obituary was placed in the Congressional Record in May, 1974. Albert Sabin wrote a biographic memoir for the National Academy of Science in 1980.22

The 1930s were memorable for scientific advances in public health. The viral cause of influenza was uncovered by Richard Shope and Thomas Francis at the Rockefeller Institute. The use of egg embryos was a new method of growing viruses that would lead to the chick-embryo rabies vaccine and other viral vaccines. The development of strain 19 Brucella vaccine and the Stern anthrax vaccine in South Africa were important to the control of brucellosis and anthrax worldwide. The investigation of toxoids by Gaston Ramon, a French military veterinarian, led to the discovery of tetanus toxoid for horses and humans.

In 1938, the brucellosis epidemic among veterinary students and others in the bacteriology building at Michigan State College raised epidemiologic questions about how Brucella organisms were spread.23 Up to then the disease was believed to be caused by direct exposure or ingestion of milk containing Brucella bacteria. Airborne organisms had not been thought of, although Professor I.F. Huddleson, whose research laboratory was the focus of this investigation, disagreed with this opinion. The Michigan state investigators were public health scientists and engineers who focused on the water-borne theory of contaminated glassware not being autoclaved properly, which permitted contamination of the water system.24 While I was a student in the brucellosis testing laboratory, I heard the discussion about the means of spread being by water and back siphonage.

Dr. Stafseth encouraged many students to consider public health as a career. Dean Ward Giltnert learned of my interest, which had been heightened by my experiences with the brucellosis epidemic, and arranged for me to become eligible for an USPHS fellowship. That was done by assigning me to an internship at the Michigan Health Department. There, health department veterinarians, pathologists, and bacteriologists taught me how to remove and examine an animal's brain for rabies and inoculate mice with the matter to further the diagnosis. I also learned to grow vaccinia on the belly of a calf that had been shaved, scrubbed, and disinfected. Harvested scabs were be tested for contaminants, which was a lengthy procedure. High standards were maintained for development of pertussis/whooping cough vaccine, equine antiserum for tetanus, and rabbit pneumococcal antiserum.

Dean Giltnert and C.C. Young, the director of the Michigan Public Health laboratories, put together my fellowship application to the USPHS and the Harvard School of Public Health. Approval came the week before graduation.

The summer of 1941 was spent as an intern at the Petoskey Animal Hospital. There I learned about swimmer's itch, a common affliction of humans and pets caused by an avian schistosome. At Harvard it became my thesis subject. In addition, it was the first subject I reported on at the 1942 AVMA convention in Chicago, with Dean Giltnert in the audience.

Harvard was exciting. There was talk of war, and President Conant addressed the incoming class with the admonition there would be important changes in the world during their student years. The School of Public Health faculty and students were stimulating. I was the only veterinarian, which attracted some attention.

The first position offered to me was from K. F. Meyer, but it wasn't funded. After discussing options with the USPHS Chicago Regional Offices, I accepted a position as a civilian sanitary in the Ohio Department of Health.

In September 1943, the United States Army offered me a commission as a veterinary officer. I received a commission as a sanitary. After I was commissioned, I spent a short tour of duty in the region with Senior Sanitarian William H. Haskell, an authority on pasteurization methods and practice. He was one of the civil service veterinarians who were USPHS milk spe-
cialists brought in as early as 1924. In 1943, other newly recruited veterinarians, Raymond Helvig and Ted Price, were also commissioned as sanitarians.

My assignment was in Puerto Rico and the Virgin Islands, where I was to be responsible for coordinating milk and food sanitation and evaluating any zoonotic diseases in areas that had been isolated by the war. Brucellosis and bovine tuberculosis were widespread. Diagnosis of Venezuelan equine encephalitis and bat rabies in Trinidad caused some concern in the Islands, but did not spread beyond Trinidad. Rabies was indigenous in the Dominican Republic and Cuba in the 1940s.

 Origins of Organized Veterinary Public Health in the USPHS

In March 1945, the Pan American Sanitary Bureau asked the USPHS San Juan, Puerto Rico, office to do an assessment of the post-war veterinary public health problems in the Dominican Republic and Haiti, neither of which had a functional veterinary service. I was directed to make a report on their problems. There were no reported diseases, but bovine tuberculosis, brucellosis, and mastitis were known. Veterinary laboratory support was nonexistent, and the abattoirs kept no records. There were reports of rabies in dogs, and possibly in horses. Some years later there was an epizootic of equine encephalitis.

The end of the war in Europe and shortly thereafter changed the reassigments. I met with Assistant Surgeon General Joe Mountin who asked me, “What are you veterinarians going to do for the public health now that the war is over?” The follow-up to that interview is in the JAVMA article titled “The 50th Anniversary of the Veterinary Medical Corps Officers of the US Public Health Service.”

After the approval of a veterinary public health section in the States Relation Division, some months were spent at the National Institutes of Health establishing a liaison with federal agencies, congressional interests, state relations, and professional associations such as the American Veterinary Medical Association and the American Public Health Association.

Inauguration of veterinary public health in 1945 as a national program in the USPHS stimulated interest worldwide, especially in the newly created international agencies. The United Nations Health Office organizing committee, chaired by Surgeon General Tom Parran, met in New York in June 1946. The Public Health Service officers and personnel were asked by the surgeon general’s chief of staff, G.L. Dunnahoo, to suggest topics. Veterinary public health was new, but a few weeks before the organizing group was to meet, I was directed to make a presentation about veterinary public health and answer questions at the surgeon general’s staff meeting. After the meeting, I asked Dr. Dunnahoo if he would be interested in recommending a veterinary public health program for the World Health Organizing Committee. He urged me to give him a memo recommending a veterinary public health activity wherein I indicated that the Veterinary Public Health (VPH) program would be concerned with animal diseases transmissible to humans, would carry on liaisons with veterinary activities in the agriculture agencies, and collect information on animal health.

Some months later I asked how the VPH recommendation was received. Dr. Dunnahoo said there were no objections or discussion. The VPH item was accepted and placed in the records.

In September 1947, after Surgeon General Parran’s approval of the veterinary medical officer cadre, Dr. Mountin felt my activities were successful. He told me I was to be assigned to the newly created Centers for Disease Control (CDC), formerly the Malaria Control in War Areas. There the veterinary public health program was established as a division. The new director of the CDC was Dr. R.A. Vonderlehr, who previously was Chief of the Puerto Rico Regional Office, which is who I served under. He gave excellent support, as did his deputy, Dr. Justin Andrews, who succeeded Dr. Vonderlehr a year later.

As the war wound down, I was in Washington for further assignment. While in Washington, I visited the Pan American Sanitary Bureau to discuss my report with Surgeon General Hugh S. Cummings, who served the Pan American Sanitary Bureau for a decade after retiring from the USPHS. At our meeting, I emphasized the need for a veterinary public health program to help update animal health, prevent zoonotic diseases, and ensure food safety. Dr. Cummings listened and told me to discuss the need for a veterinary public health program with his medical staff, where the proposal was enthusiastically accepted. The veterinary public health program was initiated with Dr. Aurelio Malaga Alba, a Peruvian military veterinarian, as a consultant in 1948. Dr. Fred Soper, the post-war director of the reorganized PAHO, later appointed Dr. Ben Blood to organize a veterinary public health program in June 1949. He served until the 1960s.

Rabies

Rabies was a national problem after the war. There was a great movement of people as war industries and encampments closed. Pets were lost or abandoned. The incidence of rabies in humans was the highest ever recorded. Human vaccines were not always effective. Canine rabies vaccine protection was short and the vaccines were given every six months. Rabies became the lead program of the Veterinary Public Health Division. To head the activity, Dr. Ernest Tierkel, a University of Pennsylvania graduate who had completed his Masters of Public Health, was recruited.

He, Bob Kissling, and Martha Eidson, along with a staff of animal handlers, became the nucleus of the national rabies program.26-27 They successfully demonstrated the effectiveness of a new chicken embryo rabies vaccine in the laboratory28 and later in epidemic situations.29 Some others who followed from CDC and who contributed to the control and prevention of rabies are George Baer, Keith Sikes, Jerry Winkler, and Charles Rupprecht.

Brucellosis

Dr. Mountin had said that the public health authorities of Indiana, Michigan, and other states believed that brucellosis in humans was of concern.
They went so far as to say that, as the sanitariums lost tuberculosis patients, brucellosis patients would take their place. The Indiana Health Department was to be our brucellosis project site under Sam Damen, PhD, the director of laboratories. The goal was to determine what action the health agencies should take.

The federal Bovine Brucellosis Control program was active in all states. It became apparent that if the health authorities got active, the animals could be eliminated as a source of human disease. We brought the problem to the attention of Dr. Herman Bunderson, Chicago's health officer who remembered the struggle to eradicate bovine tuberculosis in the Chicago milk shed which included dairy herds in six midwestern states. In 1928, he had required all milk coming into Chicago to be from tuberculosis-free herds regardless of whether the milk was to be pasteurized. He recognized the brucella problem and shortly thereafter instituted the same standards for the elimination of bovine brucellosis.

The brucella eradication program was supported by the USPHS milk code, which required that all Grade-A milk be from disease-free herds. The Chicago control program was soon adopted by big city health authorities, which gave impetus to the state federal testing programs. Human brucellosis declined rapidly in the Midwest from thousands to hundreds, and to less in a decade. Most of the human cases were of occupational origin and among people using raw milk in rural areas.

There was a scare of brucellosis in Dugway proving ground in western Utah in the early 1950s. H.G. Stoenner, who investigated the alleged contaminated area, found the problem to be a rodent disease caused by Brucella neotoma, which does not cause disease in humans or domestic animals, but will cause antibody formation in cattle.

**Trichinosis**

The late Professor S.E. Gould initiated studies at the Wayne State Medical School on the use of irradiation to destroy *Trichinella*. After the war, there was great interest in the application of atomic energy for civilian use. He persuaded the American Medical Association to host a Symposium on Trichinosis in 1953 in which the CDC participated. The evidence was conclusive that gamma radiation was effective at low doses. It was not until 1985 that irradiation for commercial use was approved by federal agencies. The Zimmerman Human Tissue survey from 1966 to 1970 revealed the lowest rate ever. Modern methods in raising pigs, the prohibition of feeding garbage to swine, and consumer education are all contributing factors in the decline of disease in pigs and humans. Trichinosis gradually declined in the United States.

**Other Parasitic Diseases**

Other veterinary public health studies of parasitic diseases involved cutaneous larva migrans caused by the common dog hookworm larva *Ancylostoma caninum* entering the skin and causing an intense itching. This was common in the southeast states among persons exposed to damp, sandy soil; children playing in sandboxes; bathers at the beach, and utility men. Toxocariasis or larva migrans is another parasitic disease attributed to parasite larvae of dogs migrating in the body of a foreign host, such as human beings.

Toxoplasmosis has been recognized as a common human infection. The domestic cat is recognized as a common source of human infection. Infection may be caused by consuming meat. Irradiation is effective in destroying the oocyst in pork.

### Equine Encephalitis, Plague, and Anthrax

In the early 1950s, there was a large equine encephalitis epizootic in central California that required the assignment of all CDC Veterinary Officers. Another equine encephalitis epizootic was in New Jersey in 1959. Since then there have been a few epizootics of the equine encephalides. The principal reservoir is birds. In addition, the virus survives in mosquito eggs over winter. The CDC–Fort Collins laboratory has been at the forefront of investigations of arboviruses and their role in human health.

Plague is sporadic in the United States. It is primarily a disease of rodents. The appearance of plague in domestic and feral cats has brought the ancient scourge to households in the western states.

An unusual epidemic of anthrax, introduced by contaminated bone meal in the 1950s, caused alarm in public health circles. The problem of whether milk could be a vehicle was of concern. A search of literature found that milk was never a cause of human or animal anthrax disease.

### Salmonellosis

Salmonellosis was a recognized public health problem among the civilian populations during and after World War II. After the war, investigators determined that it was widely disseminated. Phil Edwards led the way at the University of Kentucky and later at CDC. Mildred Galton, Chief of the Veterinary Public Health Laboratory, contributed in many ways. She had an unusual ability to find evidence that others had overlooked. She demonstrated *Salmonella* in animals. Her studies on transported pigs revealed how stress caused latent infection and induced shedding. The same reaction was found in other species. Her work on raw egg meats led to their pasteurization even though the egg slurry was to be in baked or cooked products. She was among the first to find *Salmonella* in raw milk 40 years ago. Her work on the frequent presence of *Salmonella* led to the federal poultry inspection program in the late 1950s.

### Leptospirosis

Leptospirosis was identified in animals as a separate clinical entity in 1850, about 30 years prior to the time Weil described the disease in humans. In 1898, an epidemic in dogs was recorded in Stuttgart, Germany, but it wasn’t until the etiologic agents were discovered 30 years later that it was realized the disease in dogs and humans was caused by microorganisms of identical morphology. Three years after the discovery of leptospires, it had already been shown that injection of the microorganisms into puppies would lead to a severe
icterohemorrhagic disease. During the first half of the 20th century, analysis of evidence accumulated throughout the world revealed that morphologically and serologically identical leptospires could affect virtually all known mammals and some lower vertebrates. By the late 1940s and early 1950s, leptospirosis in domestic animals was already established as a disease of major concern in veterinary medicine and veterinary public health.

During the years of the late 19th century and early 20th century, especially during the period preceding the discovery of the causative agents by Insada, only severe cases of leptospirosis could be diagnosed clinically. This fact led to the still prevailing notion that leptospirosis has to be associated with jaundice and nephritis. With improvement of diagnostic procedures and their availability to more laboratories, it was soon realized that most affected animals have no signs of disease or may have various clinical signs. Another point that contributed to the confusion in clinical diagnosis was the fact that isolated serovars were given names denoting the clinical signs observed in the patients. Thus, it was expected that infection by the serovar icterohaemorrhagia would lead to hemorrhagic jaundice whereas infection with serovar grippotyphosa should resemble the signs of catarrhal fever. In fact, both serotypes can cause both signs.42

From 1950 to 1970 in the United States, numerous outbreaks were recognized among animal handlers, veterinarians, and swimmers, as well as people whose occupation exposed them to contaminated wastewater. Galton edited the Leptospiral Serotype Distribution Lists through 196643 and Sulzer carried it up to 1973.44 They were truly dedicated in keeping records of leptospiral serotypes.

Stoenner and associates investigated a large epi-

demic involving L pomona in cattle in Washington, which involved many herds but fortunately few human beings.45 The effectiveness of vaccines was observed. In recent years there have been few epizootics reported, and epidemics are most commonly reported among swimmers. There is wide agreement that vaccination of cattle and dogs has reduced environmental contamination.

**Listeriosis**

Listeriosis was first recorded in 1926 and the first reported human case was in Denmark in 1929. Prevention of listeriosis is not possible with the knowledge available. There are no immunizing agents of proven worth. Killed bacterins have been disappointing and living attenuated vaccines have not been evaluated properly nor have they shown promise in limited experiments.

High-risk groups are pregnant women, neonates, diabetics, alcohol dependents, persons with neoplastic disease, or those being treated with corticosteroids or antimetabolites. Among animals, ewes are at the highest risk late in the first pregnancy. Sheep in late pregnancy should not be fed ensilage of doubtful quality nor be exposed to severe cold, inclement weather, or crowding. Chinchilla also have high susceptibility.

Lack of accurate epidemiologic information on listeriosis hampers prevention and control. Only by compulsory reporting of human and animal infections can the prevalence of this uncommon disease be estimated. Medical and veterinary health agencies should exchange information and coordinate their control measures. Farmers and veterinarians should adopt sound sanitary practices in handling sick or aborting domestic animals and livestock. Prevention and control of listeriosis in humans will depend on an increasing index of suspicion and increasing awareness of its diverse clinical manifestations. Because L monocytogenes is susceptible to most antibiotics, early administration after the diagnosis substantially decreases mortality. Cortisone and its derivatives may, however, cause subclinical infections to become overt.46

After the end of the war in Europe, the breakdown of veterinary food hygiene allowed salvaged food to spread zoonotic diseases. Although there likely were sporadic cases, food-borne listeria went largely unnoticed until the period between 1949 and 1957, when a sharp increase in the number of stillborn infants was observed in an obstetrical clinic in Halle, in the former East Germany. Seeiger confirmed that L monocytogenes had caused the stillbirths, and he suspected that raw milk, sour cream, sour milk, and cottage cheese were the vehicles that transmitted the pathogen. Later Potel isolated identical serotypes of L monocytogenes from a mastitic cow and from stillborn twins delivered by a woman who had consumed raw milk produced by the mastitic cow. Additional outbreaks of listeriosis were recorded in Halle between 1960 and 197144 and in Bremen, in the former West Germany; in 1960 and 1961. Unfortunately, the vehicle that transmitted L monocytogenes in these outbreaks was never identified. At the same time there were numerous cases of abortions, stillbirths, and reproductive tract diseases reported in France. The disease remains prevalent in western Europe to the extent that all midwives and obstetricians alert their patients.

Listeriosis of food-borne origin was virtually forgotten until 1981, when an outbreak occurred in the Maritime Provinces of Canada and was associated with consumption of contaminated coleslaw. Two years later, a major outbreak in Massachusetts was epidemiologically linked to consumption of a particular brand of pasteurized whole and 2% (milk fat) milk. Although questions have been raised about the adequacy of the epidemiologic study, no other food has emerged as the vehicle that transmitted L monocytogenes in this outbreak. In 1985, Mexican-style cheese made in a factory near Los Angeles was definitively linked to a large outbreak of listeriosis. This was followed in 1987 by the linking of consumption of Vacherin Mont d’Or, a variety of cheese, to an outbreak of listeriosis in the Canton of Vaud in Switzerland.20

In recent years, food-borne outbreaks continued to be reported in North America and Europe. During the 1990s, many more human cases and deaths were reported in the United States. The vehicle being reported as contaminated are cold cuts, canned meats, and frankfurter sausages. Worldwide, listeriosis is a problem in the temperate zone.

**Emerging zoonotic food-borne diseases**
Escherichia coli O157:H7, the enterohemorrhagic strain and other E coli characterized by cytotoxins, are major causes of enteric disease in humans, but less for food-producing animals that may be infected without clinical signs. Pasteurization of milk is effective in the control of E coli spread. Now irradiation of other foods of animal origin is also effective for the protection of public health.

Other emerging food-borne zoonotic disease agents, such as Cryptosporidia parvum, a coccidian protozoa, have been found worldwide. Cyclospora cayetensis is a coccidian protozoa, which is primarily food-born, but also found as a contaminant of fruit and vegetables. A similar coccidia has been associated with birds. Giardia spp are found in numerous animals. During the late 20th century, the flagellate protozoan was identified worldwide as the cause of disease in humans and animals.

An old problem, but new in the United States, is the emergence of Taenia saginata and T solium, which are largely found in migrating persons. The cysts induced by the T solium spp are found in beef and pork and are easily destroyed by irradiation, a technology that is being accepted in the southern countries where diseases caused by Taenia are economic as well as public health problems.

Tuberculosis
American veterinarian Martin M. Kaplan, VMD, MPH, was recruited by an English physician with whom Kaplan worked with in United Nations Rehabilitation and Recovery Agency in Greece. In 1948, Kaplan came to the newly established World Health Organization in Geneva, Switzerland. He single-handedly developed a VPH program in the communicable disease division that is a model for a public health program. During the next 20 years, he organized the expert committee meetings and technical reports. The first was in 1950, which reviewed tuberculosis.

At the end of World War II, tuberculosis was a major disease problem in humans and animals. American tuberculosis authorities had reported that 30% of the human cases in the American-occupied Germany were caused by Mycobacteria tuberculosis bovis. The problem was referred to the WHO Expert Zoonoses Committee by the WHO Expert Tuberculosis Committee. There was no consensus on what recommendation to make. The Danish veterinarians spoke for the classical tuberculin test and identification. The French urged use of BCG vaccinations. The success of eradication of bovine tuberculosis in the United States was held up as the ideal method. Eventually the committee recommended test and removal, with the caveat for developing countries to try other methods, including BCG vaccination.

World Health Organization
The first WHO Expert Committee on the Zoonoses was held in late 1950. This was followed in 1958 by zoonoses study groups that were chaired by K.F. Meyer in Stockholm. In 1965, at the meeting of the WHO Zoonoses Expert Committee in Geneva, I was the chairman. The next meeting in 1974 was chaired by Calvin Schwabe, professor of epidemiology at the University of California School of Veterinary Medicine, and the School of Human Medicine. Schwabe summarized the WHO Veterinary Public Health in his third edition of Veterinary Medicine and Human Health: “The final objective of veterinary medicine does not lie in the animal species that the veterinarian commonly treats. It lies very definitely in man, and above all in humanity.”

Pan American Health Organization
The PAHO Veterinarian Public Health program was inaugurated in June 1949 with the recruitment of Ben Blood, a retired United States Army veterinary officer. Blood established the Pan American Zoonoses Center in Azul, Argentina, in the 1950s, and the Pan American Foot and Mouth Center in Rio de Janeiro, Brazil, about the same time. Later, the Zoonoses Center was moved to Buenos Aires where Joe Held was director.

Pedro Acha succeeded Ben Blood in the 1960s and gave impetus to VPH in the Americas with support of the World Bank. He was able to recruit public health veterinarians and staff to the regional offices of PAHO and assist national health administrations with trained officers. Dr. Acha was followed by Dr. Mario Fernandez, an experienced virologist who had been director of the PAHO Foot and Mouth Disease Center. Dr. Joe Held, a former assistant surgeon general, USPHS, was the next director. Currently, Primo Arambulo is the coordinator of the VPH program. All have made substantial contributions. The control of urban rabies is important to population centers. The eradication of foot and mouth disease in southern South America, with the leadership of Vincent Estudillo, for the past decade has given stimulus to the goal of the Americas being free of foot and mouth disease. The progress in bovine tuberculosis control is credited to Isabel Kantor, who taught scientists how to make tuberculin, evaluate tuberculin test results, and gather epidemiologic data, which are critical to good surveillance. Jaime Estupinan, as director of the PAHO Zoonoses Center, guides the transition to encompass food-borne diseases.

We in veterinary public health recognize the contributions of Pedro Acha and Boris Szyfres for their invaluable book, Zoonoses and Communicable Diseases Common to Man and Animals, in Spanish and English. It has been the foundation of veterinary public health epidemiology and surveillance in the Spanish-speaking countries of the Americas.

George Beran is to be recognized as one of the consultants to PAHO and WHO, and for his work in the Philippines. He has performed in admirable style for more than 50 years in teaching, research, health promotion, consulting, writing, and editing. He has updated the CRC Zoonoses Handbook Series and the PAHO Zoonoses reports, and hopefully will continue to do so.

We pay tribute to all the American veterinarians who demonstrated and promoted veterinary public health in the United States. Most of these early pioneers were recruited by the CDC and assigned to states that had zoonotic disease problems. Their service to the public health in the 20th century is better health in all humans and animals.

Royal Veterinary Institute, Berlin, Germany.
References

This year, the American College of Veterinary Preventive Medicine, originally incorporated as the American Board of Veterinary Public Health (ABVPH), in Washington, DC in 1950, is celebrating the 50th anniversary of its founding. The ABVPH and the American College of Veterinary Pathologists (ACVP) were the first specialties in veterinary medicine to be recognized by the American Veterinary Medical Association (AVMA). This distinction was conferred unanimously by the AVMA House of Representatives during its 88th annual meeting in Milwaukee, Wis. This was the beginning of specialization in veterinary medicine in the United States or elsewhere in the world.

Actions taken by the House of Representatives were important for the future of specialty practice in veterinary medicine in the United States. First, the AVMA Council on Education was authorized “to express its approval of such examining boards in veterinary medical specialties as conform to standards of administration formulated by the Council.” Second, the Essentials of Approved Specialty Boards or Colleges in Veterinary Medicine, formulated by the Council on Education, was approved. Finally, as noted, the applications from the ACVP (Feb 10, 1950) and the ABVPH (Jul 31, 1950) for specialty recognition were approved unanimously by the House.

Unrelated, but equally indicative of the progressive outlook of the AVMA in 1951, was the action by the House to approve an AVMA Executive Board recommendation for “the establishment of some type of AVMA representation in Washington, at a beginning maximum expenditure of $2,500 a year.” Thus was the beginning of the AVMA Washington Representative.

Evolution of Veterinary Public Health and Preventive Medicine as a Specialty

The history of the American College of Veterinary Preventive Medicine (ACVPM) can be traced to 1949, when a group of 12 veterinarians formed an organizing council for the purpose of establishing what they then
designated the American Academy of Veterinary Public Health. The first meeting of the council was held Jul 11, 1949, in Detroit, Mich, during the annual meeting of the AVMA. The successor to the academy, the ABVP/ACVPM has held its annual executive and membership meetings concurrently with the annual convention of the AVMA, an annual alliance of 50 years.

The organizing council members were distinguished public health practitioners and academicians: three were active duty United States Army Veterinary Corps officers (Lieutenant Colonels Frank A. Todd, Philip R. Carter, Mervyn B. Starnes); one was a commissioned Public Health Service officer (Dr. James H. Steele); one was an international veterinary public health consultant (Dr. Benjamin D. Blood); three were city or state health department veterinarians (Drs. L.W. Rowles, Martin D. Baum, Alexander Zeissig); three were academicians (Drs. Ival A. Merchant, Henrik J. Stafseth, Franklin A. Clark), and one, Dr. John G. Hardenbergh, after a distinguished practice, military, and academic career was serving as the executive secretary of the AVMA. Colonels Todd and Carter had served together for several years in the European Theater of Operations during and following World War II, where they were assigned to civil affairs/military government operations. Colonel Carter, one of two surviving members of the council said, “We had many talks about the idea of a veterinary public health specialty, and “we kept up such interest after our return to the United States.”

Dr. James H. Steele, the other surviving member of the 12-member council, who is known and familiar to many as a leading icon in veterinary public health, served as the first secretary to the organizing council. His report of the first meeting of the council stated that Frank Todd was elected temporary chairman and he was selected temporary secretary. Chairman Todd appointed two committees: one to establish a definition of veterinary public health; the other to develop bylaws to include criteria for eligibility. The next meeting of the council was scheduled for Sunday, Oct 23, 1949. This coincided with the annual meeting of the American Public Health Association, with which some council members were affiliated.

Secretary Steele included this cautionary note in his first report:

It should be explained to all members of the Organizing Council and interested parties that physical presence at these organization meetings does not make one a charter or founding member. Membership cannot be determined until the bylaws eligibility report of Doctor Rowles’ committee can be accepted by the Organizing Council.

At some time during or immediately following the New York meeting in October 1949, the academy redesignated itself as the American Board of Veterinary Public Health. A copy of the constitution and bylaws, dated Nov 30, 1949, stated that the name of the organization would be the American Board of Veterinary Public Health. Perhaps this designation was prompted by the fact that the term “board” is more accurate for the purpose of the organization, which is the examination and certification of veterinarians in the specialty of veterinary public health. Likewise, the name of the corresponding specialty in human medicine, The American Board of Preventive Medicine and Public Health, which was officially recognized earlier in 1949, and may have inspired the change from academy to board. Whatever the circumstances, the designation was professionally and technically appropriate. The ABVPH was officially incorporated as a non-profit organization under the jurisdiction of the District of Columbia on Feb 3, 1950.

Early Organization of the ABVPH

The first constitution and bylaws of the ABVPH provided for an executive council of a president, vice president, secretary, treasurer, and six councilors. The positions were filled by 10 of the 12 organizing fellows. Dr. Frank Todd, then Lieutenant Colonel Frank Todd of the US Army Veterinary Corps, the first president, was elected by the other organizing fellows. Terms of office were three years for all positions. Initially, a pair of councilors served one or two years in order to establish a turnover of two councilors each year.

Four classes of membership or fellowship were established. They were organizing committee fellow, charter fellow, fellow, and honorary fellow. The term “fellow” persisted until the constitution was amended on Aug 14, 1960. The term “diplomate” supplanted the term “fellow.”

The original prerequisites described for applicants wishing to take the board examination were that they:

- Be a graduate from a veterinary school recognized by the AVMA
- Have an Masters of Public Health (MPH) or equivalent degree from a school of public health recognized by the American Public Health Association (APHA) and at least six years of experience in a recognized civilian or military public health agency, and have made a distinct contribution to the advancement of veterinary public health; four years of additional experience along with recognized accomplishments in veterinary public health may be substituted for an advanced degree
- Possess a license to practice veterinary medicine issued by a recognized national or state licensing agency.

Administration of the board and all other duties and powers ordinarily delegated to the governing body of a corporation were vested in the board’s council of officers. The council also judged compliance of candidates with prerequisite requirements for examination, appointed the examining board, and certified all successful candidates as specialists in veterinary public health. The early constitutions did not provide for any standing committees. In essence, the council, composed of the four elected officers and six councilors, was responsible for the entire operation of the ABVPH.

The first meeting of the newly constituted ABVPH was held in Miami Beach, Fla, in August 1950 during the annual meeting of the AVMA. The constitution decreed that all regular meetings of the board and...
council be held annually at the time and the place of
the annual meeting of the AVMA. The board and its
successor, the ACVPM, have adhered to this practice
faithfully for the past 50 years.

In 1950, the board was occupied largely with the
processing and approval of applicants for charter fel-
lowship. An initial group of 55 candidates was com-
piled from veterinarians recommended by the 12 fel-
lows of the organizing committee. The group was
screened by the council and those selected were invit-
ed to apply for charter fellowship. Twenty-one appli-
cants were approved as charter fellows bringing the
total number of fellows in the ABVPH to 33 in early
1951.

The second annual meeting of the ABVPH was
held in 1951 in Milwaukee, Wis. Thirteen of the 33 fel-
lows attended this meeting. The occasion was of par-
ticular importance as the AVMA House of
Representatives approved the applications of the
ABVPH and the ACV maintained the first recognized special-
ties in veterinary medicine.

President Todd also announced with pleasure that the definition of veterinary public health, as prepared
by the board and adopted in 1950 at its first meeting,
had since been adopted by the World Health
Organization and the Food and Agriculture
Organization of the United Nations. The definition,
developed in response to President Todd’s 1949 request
reads, “Veterinary public health is all community
efforts influenced by the veterinary medical arts and
sciences applied to the prevention of disease, protec-
tion of life and promotion of the well-being and effi-
ciency of man.”

Prerequisites and Examination Process
The method, time, and place for holding the first
examination of candidates was discussed intensely at
the second annual meeting of the ABVPH. President
Todd appointed the first examining committee, which consisted of four fellows: Drs. Alexander Zeissig,
Stanley L. Hendricks, James E. Scatterday, and Mervyn
B. Starnes. For the balance of the year and through
1952, the committee reviewed the possible
methods of conducting the examinations. A set of
questions based on the APHA merit system examina-
tions and New York State Health Department examina-
tions were used in developing a multiple choice writ-
ten examination. No further details are available on the
nature of the written examination. The first examination
was planned to be given in connection with the
APHA meeting in Cleveland, Ohio in October 1952.

Seven veterinarians were approved to take the first
formal examination. All were in the military services:
six Air Force and one Army veterinarian. They passed
and were certified as veterinary public health specialist-
s on May 29, 1953. Brigadier General Wayne Kester,
first Chief of the Air Force Veterinary Corps, was insis-
tent that his officers receive postgraduate public health
education and take the board examination in the pub-
lic health specialty. His interest carried substantial
influence with his officers, as they comprised 82% of the
1953 and 1954 successful candidates examined by the
ABVPH. The predominance of military veterinari-

during a 12-year period, from 1966 to 1978, resulting in the organization: veterinary preventive medicine. It occurred among veterinary public health and veterinary regulatory medicine practitioners, into one specialty organization: veterinary preventive medicine. It occurred during a 12-year period, from 1966 to 1978, resulting in the membership of the ABVPH, as well as the organizing members of a series of proposed specialty groups variously identified as the American College of Veterinary Public Service Practitioners (1966), the American College of Regulatory Veterinary Medicine (1971),4 and as the American College of Veterinary Preventive Medicine (1973),1 which was granted probational status by the Advisory Board on Veterinary Specialties (ABVS) in 1973. The last is not to be confused with the ACVPM (1978) successor to the ABVPH. There were a number of meetings, telephone conversations, and exchanges of correspondence between representatives of the ABVPH and the probational college representatives, particularly between 1971 and 1978.3 Although the prolonged process detracted energy and money from the operations of the ABVPH, the beneficial outcome atones for the labor and costs. Ultimately, it was the decisive action of the administration of the ABVPH to scrub previous approaches to unifying the specialty interests of public health and regulatory veterinarians and simply revise the constitution of the functioning ABVPH.5 Past accounts of this transition have described this outcome as a merger of the ABVPH and probational ACVPM (1975). In fact, there was no merger of these organizations, but rather an induction of members of the probational college into a fully recognized and functioning certifying organization. The constitution and bylaws of the ABVPH were revised and unanimously approved by its membership to rename the board the ACVPM, and adjust the categories of members and representation on the council and examination committee. Twenty-six veterinarians, members of the probational college, were invited to become charter diplomates of the ACVPM. Twenty-three accepted, three of whom were appointed to the board of councilors and two to the examinations committee. The expertise of members of the probational college was merged with the ACVPM. Certification and examination procedures remained essentially the same. An amendment to the responsibilities of the council to “recognize specific subspecialties and approve procedures for certification in such subspecialties,” which would separate diplomates into public health, public administration, or regulatory medicine subspecialties, was never approved.

The first meeting of the fully approved ACVPM was held Jul 17, 1978, with Dr. John H. Helwig presiding. It was appropriate that Dr. Helwig preside at the first meeting of the ACVPM, as he had been involved in this issue since 1966. At that time, he was the representative to the ABVPH. At the time, there was interest for specialty recognition among some regulatory veterinarians who were members of the committee on Meat and Milk Hygiene of the United States Livestock Sanitary Association.6 Addressing the group’s interest, Dr. Helwig reasoned that food inspection is a part of public health and stated, “I see no reason for having a separate specialty board for this area” but suggested that “we (ABVPH) give some attention to the possibility of incorporating new needs in our ABVPH” and “perhaps a name such as the American Board of Veterinary Preventive Medicine would take care of their needs.” Much later, in a Nov 30, 1977, correspondence to Dr. John O’Harra of the probational ACVPM, Dr. Helwig stated, “There is no question about wanting to merge and we hope to do so with consideration and dignity for everyone.”

Dr. Helwig was succeeded by Dr. William E. Jennings (1979 to 1982). Dr. Jennings was the last of the three-year-term presidents. Succeeding presidents served one-year terms; however, beginning in 2000, the presidents of the ACVPM will serve two-year terms.

Transition of the Board to the American College of Veterinary Preventive Medicine

The most important development in the history of the specialty of veterinary public health and preventive medicine was the transition of the ABVPH to the ACVPM.3 The resulting college was formally recognized by the AVMA on Jul 16, 1978, and incorporated in the District of Columbia on Jan 23, 1979. This seamless transition preserved the continuity of the organization, its legacy, and the historical founding in 1950, expanded the opportunity for all practitioners of veterinary preventive medicine to achieve specialty recognition. The transition was much more than a constitutional revision and organizational restructuring. It enabled the bonding of two sometimes-quarrelsome factions, veterinary public health and veterinary regulatory medicine practitioners, into one specialty organization: veterinary preventive medicine. It occurred during a 12-year period, from 1966 to 1978,4 resulting in evolution and maturity of the membership of the ABVPH, as well as the organizing members of a series of proposed specialty groups variously identified as the American College of Veterinary Public Service Practitioners (1966), the American College of Regulatory Veterinary Medicine (1971),4 and as the American College of Veterinary Preventive Medicine (1973),1 which was granted probational status by the ABVS in 1973. The last is not to be confused with the ACVPM (1978) successor to the ABVPH. There were a number of meetings, telephone conversations, and exchanges of correspondence between representatives of the ABVPH and the probational college representatives, particularly between 1971 and 1978.3 Although the prolonged process detracted energy and money from the operations of the ABVPH, the beneficial outcome atones for the labor and costs. Ultimately, it was the decisive action of the administration of the ABVPH to scrub previous approaches to unifying the specialty interests of public health and regulatory veterinarians and simply revise the constitution of the functioning ABVPH.5 Past accounts of this transition have described this outcome as a merger of the ABVPH and probational ACVPM (1975). In fact, there was no merger of these organizations, but rather an induction of members of the probational college into a fully recognized and functioning certifying organization. The constitution and bylaws of the ABVPH were revised and unanimously approved by its membership to rename the board the ACVPM, and adjust the categories of members and representation on the council and examination committee. Twenty-six veterinarians, members of the probational college, were invited to become charter diplomates of the ACVPM. Twenty-three accepted, three of whom were appointed to the board of councilors and two to the examinations committee. The expertise of members of the probational college was merged with the ACVPM. Certification and examination procedures remained essentially the same. An amendment to the responsibilities of the council to “recognize specific subspecialties and approve procedures for certification in such subspecialties,” which would separate diplomates into public health, public administration, or regulatory medicine subspecialties, was never approved.

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Dr. Helwig was succeeded by Dr. William E. Jennings (1979 to 1982). Dr. Jennings was the last of the three-year-term presidents. Succeeding presidents served one-year terms; however, beginning in 2000, the presidents of the ACVPM will serve two-year terms.
Like many of their predecessors, Drs. Helwig and Jennings gave much of their time and abilities to strengthening the organization and improving the quality of service of the college. For their exceptional contributions, these two men were recognized with the establishment of the Helwig-Jennings Award in 1980. The award recognizes diplomates who have rendered outstanding and prolonged service to the college.

**Other Historical Aspects and Progress of the ACVPM**

In March 1983, the ACVPM submitted a proposal to the ABVS for the establishment of a specialty in epidemiology. The ACVPM Epidemiology Specialty was granted full approval by the AVMA in 1984. Twenty-six charter members were initially recognized by the specialty. Examinations for the specialty commenced in 1987. The specialty now has 59 active diplomates. The preferred name, “ACVPM, Epidemiology Specialty,” was approved by the ABVS and ACVPM Board of Councilors in 1992.

Epidemiology is the only specialty that has sought college recognition. Interest in other specialty areas waxes periodically. Currently there is growing interest in food safety specialty.

Perhaps one of the distinctive developments in recent history of the college was the formulation of a definition for veterinary preventive medicine. This was initially detailed in Article II of the July 1989 revision of the college’s constitution. In essence, veterinary preventive medicine is described as an integral component of veterinary medicine concerned with improving animal and human health through the prevention and control of animal diseases, infectious waste contamination, and related human illnesses. Veterinary preventive medicine is a more encompassing practice than veterinary public health practice. Diplomates of the ACVPM are engaged in public, private, industrial, military, or institutional practice and are involved in regulatory medicine, diagnostic medicine, extension service, public health, epidemiology; food safety, research, teaching, herd health management, population medicine, consulting, and other similar activities.

The need for executive assistance became apparent with increased activities and growth of membership in the 1980s. In 1989, a salaried position for an executive vice president was established and filled. The incumbent serves as the chief administrative officer of the college and is responsible to the executive board. The employment of an executive officer has been of critical importance in enhancing the quantity, quality, and timeliness of services offered to the membership, profession, and the public.

The organization, management, and composition of the college were intensely reviewed in 1990. Changes were effected in the constitution in September 1992 to create a smaller, more efficient executive group, improve financial management, further define the position of the executive vice president, and elevate the status of emeritus membership.

An ad hoc credentialing committee was formed by the president’s direction in 1995 to study and make recommendations concerning the prerequisite qualifications for examination; the avenues for attaining the prescribed education, training, and experience; and the need to establish a credentials committee, separating the function from the examination committee. These issues were reviewed and appropriate amendments to the constitution and bylaws were prepared and approved in November 1996. These amendments enabled the formation of a permanent standing credentials committee, awarded greater time credit for formal postgraduate education and training, and established an application process to include documentary evidence of veterinary preventive medicine experience. Subsequently, the college’s constitution and bylaws were amended in April 2000 to award additional time credit for formal education and training to remove any perception of a waiting period before a candidate might qualify for examination.

In recent years, many United States veterinary medical schools have de-emphasized or eliminated departments, faculty, and curriculums of veterinary public health and preventive medicine. To counteract this unseemly movement, the ACVPM has developed a model curriculum for teaching veterinary preventive medicine programs. Unfortunately, it has received limited use. Colleges of veterinary medicine, however, seem to be showing an increasing interest in food safety.

An early attempt was made in 1967 to promote a residency program in veterinary public health, but unfortunately was discontinued for lack of financial support. There are a few opportunities open to veterinarians for residency training in public health with the Centers for Disease Control and Prevention, the California State Health Department, and a new program in applied epidemiology and preventive medicine at the University of Virginia-Maryland Regional College of Veterinary Medicine. These, particularly the latter, offer encouragement that other residency programs will become available to veterinarians.

The college has endeavored to encourage students and enhance the professional abilities of certified veterinary preventive medicine specialists through sponsorship of awards and educational programs. The ACVPM routinely sponsors or cosponsors scientific programs at the AVMA and other professional associations’ regional meetings. The college cosponsored and participated in the seminar “Public Health in the New Millennium” at the AVMA Annual Convention in July 2000. In 1997, the epidemiology specialty, ACVPM, cosponsored a session at the AVMA Annual Convention titled “Medical Geography and Geographic Information Systems.” The college has repeatedly served as an affiliate sponsor of the meetings of the International Society for Veterinary Epidemiology and Economics, which are held every three years. The ACVPM’s Paul S. Schnwrenberger Award is presented annually to a veterinary student for excellence in public health research or studies. The college...
awards an honorarium and plaque at the annual meeting of the Conference of Research Workers in Animal Diseases (CRWAD). As a result of the college’s participation in the CRWAD, a scientific section, “Epidemiology and Animal Health,” was established in 1992. In 1988, the ACVPM, the University of Iowa, and the National Coalition for Agricultural Safety and Health cosponsored an international Conference on Agriculture and Environmental Health. The conference has led to a national policy to protect the health of the nation’s farm communities. During the past 10 years, the ACVPM has co-sponsored and participated in the USDA/APHIS symposia emphasizing the veterinarian’s role in public health.

Strategic approaches to meet the needs of a growing list of users of veterinary preventive medicine have been undertaken. For example, an ad hoc committee on production medicine is studying the integration of teaching and research of preventive medicine into clinical veterinary education, the inclusion of preventive medicine topics at livestock specialty meetings, and encouragement of veterinary students and clinical practitioners to become board certified in the ACVPM.

The college has entered into a partnership with the American Association of Public Health Veterinarians (AAPHV), formerly the Conference of Public Health Veterinarians, to combine their respective ACVPM News and Views and the AAPHV Newsletter into a single publication. This enables distribution of news and information to a larger professional community having common interests and increases awareness of both organizations. The arrangement benefits the organizations, and the combined force of the two groups assists the coalition of veterinary organizations involved in public health and preventive medicine in addressing issues of mutual concern.

**Future Perspectives**

The number of diplomates in the ACVPM has grown steadily from the initial membership of 286 in 1978 to 666 members entering the year 2000. Of these, 455 (68%) are active, 107 (16%) have emeritus status, 15 (2%) are honorary, and 89 (14%) are inactive, according to the ACVPM Directory 2000.

Analysts expected substantial growth (61%) of veterinarians in the nonprivate practice sector between 1980 and 2000. Although this has not been quantified, the impression is that the predictions were correct. With such growth in the nonprivate practice sector, which is the principal employment area of veterinary preventive medicine specialists, one might expect a similar surge in certification of these specialists. Indeed there has been a modest increase in the number of certified veterinary preventive medicine specialists.

In a 20-year period, 1980 to 1999 inclusive, 367 new diplomates have been certified with the ACVPM. This is almost half (49%) of the total 751 veterinarians who have been certified as veterinary public health/preventive medicine specialists since 1950. The number of veterinarians certified in each five-year period was 35 from 1980 through 1984, 128 from 1985 through 1989, 117 from 1990 through 1994, and 87 from 1995 through 1999. This represents an overall favorable growth for the 20-year period; however, the collective downward trend in the most recent 5 years is disquieting. There were also successive years in which few veterinarians were certified (eg, five, six, and eight in years 1982, 1983, 1984, respectively, and 13 and 12 in years 1995 and 1996, respectively). Given increased promotion and recruitment, the 128 veterinarians certified from 1985 through 1989 suggests an attainable goal for the number of veterinarians to be certified in the next five years and thereafter.

From 1950 through 1999, 751 veterinarians have been certified as veterinary public health/preventive medicine specialists. Today, the ACVPM is the sixth largest of the 20 veterinary specialty organizations recognized by the AVMA. The 455 diplomates of the ACVPM comprised about 7% of the 6,518 veterinary specialists active in the United States in 1999.

Approximately 12% of the 53,380 United States veterinarians of known employment in 1989 were certified veterinary specialists. Although veterinary practitioners are trending toward specialization, the proportion of veterinary specialists among all practitioners is not substantially high. The expectation of reaching 25% of all employed practitioners is perhaps a distant reality.

On the other hand, the 455 active veterinary preventive medicine specialists comprised only about 4.5% of the 10,180 veterinarians engaged in public and corporate practice in 1999. It is reasonable to expect the proportion of veterinary preventive medicine specialists to increase in the public and corporate sector even though federal, state, and local government employers, with the exception of the Uniformed Services, have not emphasized nor compensated preventive medicine specialization in their employment systems.

Recent legislative action awarding veterinarians in the Uniformed Services annual bonus payments for specialty certification will sustain, if not increase, the number of veterinarians seeking specialty status, particularly in the Public Health Service. Retirees from the Uniformed Services often pursue a second career in other federal, state, or local public or animal health agencies. There will be an increasing transfusion of specialists and accompanying interest for promoting veterinary medical specialties. Perhaps, too, other federal or state agencies will follow the lead of the Uniformed Services and award monetary bonuses for the veterinary specialty certification.

Compensation is but one motivational factor for board certification. Underlying remuneration for certification are other less tangible but far more professionally motivational forces. Attaining specialty certification is a distinguishing professional career accomplishment. Peer recognition for one’s qualifications and competence in the exclusive practice of a specialty is a rewarding experience of itself. Members of the college share a commonality in professional objectives that focuses their efforts and improves the quality of professional services.
Veterinary preventive medicine is the most publicly involved of all veterinary specialties. Yet, despite 50 years of activity, the veterinarian’s role in public health is not appreciated or is ignored by some physicians, other health professionals, and agriculture officials. Most often, this attitude is for lack of association or familiarization with veterinarians and their specialty education and training. This lack of recognition is an impediment to expanding use of the veterinary preventive medicine specialist. A sustained and focused effort in public relations and physician education must be mounted by veterinarians, individually and collectively, if the profession, and particularly the specialty, are to ensure its rightful place in the maintenance of human and animal wellness.

A Noble and Serving Specialty

The veterinary profession exists primarily to provide preventive health care services and expertise to animals and humans. Of all the recognized specialties in veterinary medicine, veterinary preventive medicine is the single specialty that most nearly fulfills all the proclaimed objectives of the profession as described in the Veterinarian’s Oath. Contrary to popular terminology, the practice of veterinary public health/preventive medicine is not nontraditional practice. Practitioners of the specialty prefer the collective designation of public/institutional or corporate practice and, individually, veterinary preventive medicine or public health practitioners.

The college has been an instrument not only for certification of veterinary specialists and the advancement of veterinary public health and preventive medicine, but also the basis for the formation of lasting friendships and many pleasurable experiences. It serves as a network for like-minded practitioners and enhances professional relationships. The college has a distinguished heritage, counting among its diplomats some of the most outstanding veterinary personalities in public health and preventive medicine on the national and international scene. Many are the recipients of prestigious AVMA awards. Slightly over half of all the recipients of the AVMA Public Service Award, established in 1968, are diplomats of the ACVPM.

The areas of societal needs serviced by preventive medicine specialists include research and disease prevention, and control programs for zoonoses, foodborne illnesses, antimicrobial resistant microorganisms, chemical and microbiologic safety of the national food chain, animal herd health and protection of the livestock industry from foreign animal diseases, disaster preparedness, and environmental and occupational health.

Veterinary preventive medicine is a public and animal health service-oriented specialty. Specialists are prepared to complement traditional practices with new strategies for disease prevention and control, as has been achieved in Texas with the containment and reduction of rabies in coyotes and foxes using oral rabies vaccine.

Often animal diseases are amenable to biological and chemical prophylaxis, quarantine, and slaughter, if necessary, given responsible and cooperative owners. In the case of owner irresponsibility or opposition, ways must be found to effect human behavioral changes. Fines and other penalties promote some compliance, but there remains a segment of resistant humans who must be treated with effective persuasion. Health education is an aspect of the specialty to be emphasized for enhancement of animal disease control measures.

In this increasingly complex world in which there is resurgence of old and new diseases, veterinary preventive medicine specialists practicing community health and animal population medicine will contribute substantially to the improvement of human and animal wellness and welfare.

The Legacy

The legacy of the founders of the specialty of veterinary public health/preventive medicine is conviction and the will to carry on. They were convinced there was a professional role for the veterinarian as a specialist in public health. Despite the novelty of the idea, they had the will to carry on and secured recognition for a unique professional organization. Later there were leaders who took control of a fractious situation and provided an expeditious and effective resolution binding all parties in a common organization benefiting public and animal health.

The college has had a long series of able and diligent elected officers and committee members. Constraints of this report do not permit recognition of the many individuals who have made substantial contributions. However, special mention should be made of secretaries and secretary-treasurers who worked, often sacrificing personal time and resources, to maintain the day-to-day activities, respond to urgent inquiries, and ensure the fiscal security of the organization. They are the unsung heroes and heroines of the college.

The ACVPM is endowed with a remarkably rich heritage and foundation for further growth and the expansion of specialty involvement. The college respects this inheritance and will continue to move forward for the next 50 years in advancing the cause of veterinary preventive medicine.

References

2. Steele JH. Secretary’s report of the first meeting of the council to organize an American Academy of Veterinary Public Health, 1949.

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Vet Med Today: Public Veterinary Medicine 1827
In 1999, the USDA Food Safety and Inspection Service (FSIS) established a Blue Ribbon Task Force of experts (internal and external to the agency) to evaluate the role of veterinarians in public and animal health and food safety. The veterinarian’s role is described as the purveyor of knowledge and expertise bridging animal and human health. The intent of this report is to fuel a renaissance in thinking about how veterinary medical expertise is considered, cultivated, nurtured, and used in the FSIS.

The task force developed recommendations around five major issues: defining the role of the FSIS veterinarian; education, training, recognition, and recruitment; partnerships; coordinated information management; and veterinary contributions to international credibility of FSIS.

In 1996, the FSIS issued the Pathogen Reduction Hazard Analysis and Critical Control Point (HACCP) Systems final rule to control and reduce foodborne pathogens on meat and poultry products. Federal and state meat and poultry plants must adopt HACCP, a system based on hazard prevention with performance standards set by FSIS. The rule gives all FSIS employees a much greater role in food safety and public health. Overseeing HACCP systems requires FSIS employees to make increasingly more science-based judgments. Veterinarians in the FSIS now have unique opportunities to enhance food safety by interacting more with other animal and human health professionals, promoting implementation of farm-to-table food safety and quality systems, improving the sharing of information, conducting scientific analysis of complex food safety systems, and enhancing public health through better use of resources.

From the Office of Public Health and Science, Food Safety and Inspection Service, United States Department of Agriculture, Washington, DC 20024.

Blue ribbon task force report on the future of Food Safety and Inspection Service veterinarians: public health professionals for the 21st century

Bonnie J. Buntain, DVM, MS

Roles and Responsibilities of the FSIS Veterinarian Outside the Slaughter Plant Environment

By virtue of their broad education and experience, veterinarians are qualified to deal with a wide range of areas important to food safety, including but not limited to:

- Disease recognition, especially zoonotic diseases
- Emerging pathogens
- Threats of bioterrorism
- Threats of foreign animal disease
- Public health
- Epidemiology (including outbreak investigations)
- Science-based certification and auditing processes
- Animal science and population medicine
- Pathology
- Parasitology
- Microbiology, virology, and bacteriology
- Comparative medicine and multi-species chemistry/toxicology and pharmacology
- Drug resistance mechanisms

The FSIS will depend more and more on the veterinarians’ analytical and problem solving skills for development and evaluation of broad public health policy, risk assessment, data management and evaluation, leadership, and administrative activities that have national and international impact.

An increasingly important role will be that of evaluators of risk-based data systems. Veterinarians in FSIS currently serve by sharing epidemiologic data from live animals and in-plant and post-processing pathogens and residues. Data collection and evaluation are essential components of risk analysis (assessment, management, and communication). Veterinarians need to lead effective food safety monitoring and surveillance programs to identify risks, evaluate interventions, and improve the allocation of risk-based resource management. The data results will
guide veterinary epidemiologists in their risk analysis duties from farm-to-table.

The expanded duties of FSIS veterinarians will also include more opportunities as educators, managers of teams, and creators of partnerships with researchers, industry, and consumer groups. In the future, partnering will require FSIS veterinarians to build consensus among diverse groups that are external to the agency. Commodity groups, government agencies, academe, and the food industry are key partners in producing safe food from farm-to-table. The FSIS veterinarians will play important roles in providing information on food safety and public health to assist our partners in developing verifiable HACCP-compatible systems all along the food chain.

To meet the expanding roles for agency veterinarians, FSIS envisions a Career Planning Guide for Veterinarians with the following potential career tracks:

- Public health policy and assessment—This track will hone veterinary analytic and problem-solving skills for risk assessment, data management, epidemiology, research, and policy development and evaluation.

- Inspection application—In addition to traditional roles in antemortem and postmortem inspection, FSIS veterinarians will verify and monitor animal health and product safety systems from farm-to-table.

- Administration/management—Veterinarians will be trained and mentored to be the future executives and program leaders.

- International—The FSIS veterinarians will learn the skills necessary for international negotiations, foreign languages, policies, and consensus-building around issues involving foods of animal origin. An FSIS Chief Veterinarian Public Health Officer could be appointed to coordinate FSIS activities in domestic and international technical issues related to meat, poultry, and egg products.


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The National Antimicrobial Resistance Monitoring System (NARMS) for enteric bacteria was initiated in 1996 as a collaboration between the National Center for Infectious Diseases at the Centers for Disease Control (CDC), United States Food and Drug Administration Center for Veterinary Medicine (FDA-CVM), the Agricultural Research Service, Food Safety and Inspection Service, and the Animal Plant Health Inspection Service of the United States Department of Agriculture (USDA). Bacterial isolates from humans are currently provided by 17 state and local public health laboratories. The purpose of NARMS is to prospectively monitor antimicrobial resistance in isolates of selected enteric bacteria collected from humans, animals, and animal products. The goals of NARMS are to provide descriptive data on the extent and temporal trends of antimicrobial resistance in enteric organisms from the human and animal populations; provide time-
At CDC, isolates are tested for susceptibility using minimum inhibitory concentrations (MIC). Salmonella isolates are tested with a semi-automated system for susceptibility to 17 antimicrobial agents. Campylobacter isolates are tested using the E-test system for susceptibility to 8 antimicrobial agents. Data are analyzed by a SAS system.

Results

From 1996 through 1999, 5,592 NARMS Salmonella isolates were serotyped and tested for susceptibility. In 1999, the most frequently isolated serotypes included S Typhimurium (24%) and S enteritidis (18%). Other common serotypes included S Newport (6.5%), S Heidelberg (6%), S Montevideo (3.9%), S Muenchen (3.4%), and S Javiana (2.8%). Other serotypes accounted for 36% of isolates and included 120 other serotypes. Antimicrobial resistance is more common in some serotypes than others. In 1999, all S Hadar isolates and 51% of S Typhimurium isolates were resistant to ≥ 1 agent, whereas only 2.4% of S Javiana isolates were resistant to ≥ 1 agent. In 1999, 26% of Salmonella isolates were resistant to ≥ 1 antimicrobial agent. Although most Salmonella isolates remain susceptible to the 17 antimicrobial agents tested, several concerning trends in antimicrobial resistance among Salmonella are evident. These include multi-drug resistance, highly resistant isolates, and the emergence of resistance to ceftriaxone and fluoroquinolones, which are antimicrobial agents commonly used to treat people with Salmonella infections.

Increasing multi-resistance is most evident within certain serotypes, particularly S Typhimurium. In 1999, 28% of S Typhimurium isolates were resistant to ampicillin, chloramphenicol, streptomycin, sulfa-methoxazole, and tetracycline (R-type ACSsuT), the characteristic pattern of Definitive Phage Type 104. Some S Typhimurium R-type ACSsuT isolates were also additionally resistant to kanamycin (11.8%), cephalexin (8.8%), amoxicillin/clavulanic acid (6.9%), trimethoprim-sulfamethoxazole (6.9%), ceftiofur (2.9%), and ceftriaxone (1%). Another penta-resistant pattern is prevalent among S Typhimurium isolates; resistance is to ampicillin, kanamycin, streptomycin, sulfa-methoxazole, and tetracycline (R-type AKSsuT). The percentage of S Typhimurium isolates with this pattern increased from 4.3% in 1996 to 11% in 1999, making it the second most common multi-drug resistant pattern.

From 1996 through 1999, 59 (1.1%) of 5592 Salmonella isolates were highly resistant, that is, resistant to ≥ 8 of 17 antimicrobial agents. Among highly resistant Salmonella, 42% were S Typhimurium and 39% were S Newport. Other serotypes included S Berta, S Stanley, and S Paratyphi-A. The most resistant isolate in the NARMS collection was an S Typhimurium variant Copenhagen isolate; it was susceptible only to apramycin, amikacin, and ciprofloxacin.

Since 1996, 22 Salmonella isolates were identified with resistance to ceftriaxone, an extended-spectrum cephalosporin. Most of these isolates were S Typhimurium. The percentage of Salmonella isolates with decreased susceptibility to ciprofloxacin (MIC ≥ 0.25µg/ml) has increased since 1996. The percentage of isolates with decreased susceptibility to ciprofloxacin was 0.4% in 1996, 0.6% in 1997, 0.7% in 1998, and 1.0% in 1999. These data included two ciprofloxacin-resistant isolates from 1998 to 1999.

From 1997 through 1999, 881 Campylobacter isolates were tested; 60% of Campylobacter isolates were resistant to ≥ 1 agent; 25% were resistant to ≥ 2 agents. Of concern, the percent of Campylobacter isolates resistant to ciprofloxacin increased from 13% in 1997 to 18% in 1999.

Discussion

Since 1996, NARMS has accumulated information on antimicrobial resistance among Salmonella and Campylobacter isolates collected from humans. Among Salmonella isolates, several multi-drug resistant strains are prevalent, particularly S Typhimurium R-type ACSsuT and AKSsuT. There is also emergence of resistance to antimicrobial agents that are commonly used to treat people with Salmonella infections (ceftriaxone and ciprofloxacin).

Increasing resistance to ciprofloxacin is also evident among Campylobacter isolates.

The public health utility of NARMS data is wide-ranging; the data have supported field investigations of outbreaks of illness marked by a pathogen that displayed an unusual antimicrobial resistance pattern, provided data for a risk assessment of the human health impact of fluoroquinolone use in poultry, stimulated research in molecular characteristics of resistance emergence and transfer, improved knowledge of risk factors associated with the development of an antimicrobial-resistant infection, and triggered broader research projects of prudent antimicrobial use in animals and the role of the environment in the emergence and spread of antimicrobial resistance.

For example, the FDA recently proposed to withdraw approval of the use of fluoroquinolones in poultry based on their risk assessment. The risk assessment concluded that the use of fluoroquinolones in poultry causes the development of fluoroquinolone-resistant Campylobacter in poultry, which is transferred to humans, compromising the use of fluoroquinolones for the treatment of human Campylobacter infections. The FDA’s action is based on data from NARMS and other sources. This example, and others, demonstrate that the NARMS multi-agency collaboration has brought the problem of antimicrobial resistance to the forefront; it is indeed “surveillance for action.”

References

4Sensititre, Trek Diagnostics, Westlake, Ohio.
5E-test system, AB Biodisk, Solna, Sweden.
6SAS, version 6.12, SAS Institute, Cary, NC.
Public health education of veterinarians and veterinary students for the future

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It is important to define what is encompassed by the term veterinary public health. Public health includes all those topics that are traditionally associated with the subject, such as zoonoses, food safety, and environmental studies, as well as the discipline of epidemiology. In modern day public health, it is impossible to separate the study of human diseases related to animals from the science that studies the distribution and determinants of disease in human and animal populations.

I approach this topic from the perspective of a person who has spent considerable time in what some might call public practice, that being 26 years in the United States Army conducting research on infectious diseases and research administration. This was followed by nine years as head of the Department of Epidemiology and Community Health at the Louisiana State University (LSU) School of Veterinary Medicine, where I taught graduate veterinarians and veterinary students public health and epidemiology. The Department of Epidemiology and Community Health is one of the few stand-alone veterinary epidemiology and public health departments remaining in a United States school of veterinary medicine. Finally, for a little more than a year, I have viewed the training of veterinarians and future veterinarians in public health from the standpoint of the chief administrator of the LSU School of Veterinary Medicine.

All that said and done, I find myself in a predicament. I cannot say with any certainty what the relative importance veterinary public health, in the professional program and at the graduate level, will assume in the crowded curriculums of the new millennium. I can predict that there will be ups and downs. Like so many things in life, components of curriculums can be viewed as a giant sine wave with peaks and valleys that have a periodicity of five to more than 30 years. Educators are not very original, and we tend to recycle things as a new generation of teachers mature. One common phrase heard at faculty meetings is, “Oh, we tried that 20 years ago.” Depending on where we are on the sine wave of veterinary public health (ie, in a trough or on a peak), we may think that outlook is either gloomy or rosy.

Still, I think there are some things we can look at that will help us make some predictions on what we might see in the short term. They are:

- What will be the relative importance of public health and epidemiology in medicine and health in the near future?
- How much of public health will be related to veterinary medicine and what role will veterinarians play?
- What are the external and internal factors and pressures on schools of veterinary medicine that will influence the teaching of public health?

First, what will be the relative importance of public health and epidemiology in medicine and health in the near future? I think the outlook for public health is very bright. I believe it will be the most critical and important thrust in medicine for the foreseeable future. The world’s major health problems and emerging diseases are almost all related to public health. Many of the factors responsible for making public health a high priority for funding and research include human demographics, international travel and commerce, technology and industry, microbial adaptation and change, human encroachment into wilderness areas, global climate changes, and bioterrorism.

Human demographics account for societal events that encompass such things as population growth, which is in part responsible for deforestation, war, and malnutrition. Also included are those preventable human diseases classified as behavioral risks. These include everything from not wearing a seatbelt and smoking to the human conduct that has contributed to the current modern pandemic of AIDS. International travel and commerce needs no explanation. Whether it is diarrhea caused by cyclospora infection from South American raspberries, brucellosis from Mexican cheeses, cases of malaria and leishmaniasis, or new strains of influenza, all are related to the break down of trade barriers and the rapidity and ease with which people can move around the globe.

Technology and industry include such things as the integration and concentration of food animal production facilities. In the United States, trends in all food animal production are following the poultry industry. For example, there are less than 350 producers of swine in the United States today, and conservative estimates place the number at less than 100 by the year 2003. The dairy and beef industries are following suit. All of this translates into increased stress on animals caused by intensive husbandry practices that push rapid gains and greater distances that animals must be shipped for processing. The increase in Escherichia coli O157:H7 infections in the United States, as well as the recent epidemic of infections and deaths in humans and swine in Malaysia caused by the previously unknown Nipah virus, are believed to be related to intensive animal husbandry.

Another example of technology’s effect on public health is the widespread long-term use of corticosteroid and immunosuppressant drugs in humans with cancer and various other medical conditions and those receiving organ or tissue transplants. Because of this...
trend, new diseases and life-threatening illnesses resulting from infectious agents considered to be of low pathogenicity have emerged.

Recent examples of microbial adaptation and change are the genetic reassortment of influenza strains that threaten to cause an influenza pandemic and the current controversy over the use of low-level antibiotics in animal feeds. For years, those of us in the veterinary profession have questioned whether medicated feeds contribute measurably to increased resistance in human pathogens. The answer now appears to be yes. A Minnesota study revealed an increase in quinolone-resistant *Campylobacter jejuni* infections that were acquired from poultry.

Human encroachment into wilderness areas results in closer contact with wild animals and vectors of disease. Fairly recent examples include the outbreak of monkey pox in humans in Africa, and borreliosis, babesiosis, and ehrlichiosis, all tick-transmitted diseases that have arisen in the United States because of increased intrusion into underdeveloped and undeveloped areas.

Global climate changes brought about by El Niño and La Niña account for epidemics of Rift Valley fever in Africa and new world hantavirus infections and deaths in the southwestern United States. During the past two years, we have seen deaths of large bulls in Louisiana caused by persistent hyperthermia, which has been attributed to drought and higher than normal ambient temperatures.

Finally, during the past two years there has been an increased fear that the United States is vulnerable to bioterrorism aimed at human, livestock, or crop targets. Governmental public health, agricultural, law enforcement, and national defense organizations have all greatly increased their financing in these areas to educate first responders, upgrade diagnostic laboratories, establish communication networks, and develop rapid diagnostic methods.

If we are convinced that public health will be an expanding field over the next decade and beyond, the question then becomes a matter of how much of the public-health pie will be related to veterinary medicine and what role veterinarians will play. Even narrowly defined, I believe veterinarians will be involved in leading large portions of public health activities focusing on disease control and research. Veterinarians are currently doing this in such traditional areas as food safety, zoonosis control, and regulatory medicine. Some public health veterinarians function seamlessly across veterinary and strictly human-disease-related spheres. This will no doubt expand in the future as the need for public health professionals increases.

I conclude that the future is bright for public health careers in general and in veterinary public health specifically. The question now becomes a matter of what internal and external factors will influence the relative importance of veterinary public health education in the curricula of United States veterinary schools. One is that students are not drawn to veterinary medicine because they are seeking a career in public service. Overwhelmingly, veterinary students enter professional school with the goal of practicing clinical medicine. A few students will begin to think of alternatives to practice in the second and third years, and depending on their clinical experience, some may even make a career change in their final year. These conversions from the “dark side” usually result from either disappointments in the clinical training or positive experiences in public health course work or summer jobs.

Schools are moving away from the passive model of letting students choose their careers by default to a more active, anticipatory approach. First-year students are frequently required to take courses that provide career options in addition to such topics as history, veterinary administrative structures and professional organizations. Later in the curriculum, students may take specialized electives that may include working in areas of public health and epidemiology.

One trend in graduate public health education is the dissatisfied practitioner who is looking for a career change. These individuals have spent a varied amount of time in clinical practice and found it wanting. One extreme example of this at LSU was a particularly outstanding student in his early 40s. He had owned and operated a solo dairy practice in Oregon for 17 years. Two things influenced this individual to pursue a career in public health. One was a strong social commitment, and the second was the fact that he was exposed to an excellent public health program at the University of Minnesota during his veterinary training.

The important message here is that faculty and school administrators must continuously deliver the message about the rewards and challenges of a public career, and they must never underestimate their responsibility as a role model. It is a basic precept of academia that students are relentlessly judging faculty and their education. These have long-range consequences from alumni donations to career choice. Also, it is important that at least some schools of veterinary medicine maintain a nucleus of public health faculty capable of providing graduate education. If veterinary schools do not do this, then all public health training, including veterinary public health, will be done at schools of public health, medical schools, or some other academic setting.

A factor that negatively impacts veterinary public health education during professional education is the crowded curricula. In the early days of veterinary education, physiology, histology, and gross anatomy consumed large portions of the curriculum simply because that was where the science existed and there were excellent textbooks on these subjects. Relatively little was known about other disciplines. Later, pathology, pharmacology, microbiology, and parasitology assumed importance as these disciplines matured. This was the situation until the 1970s when there was an upsurge of specialization and knowledge in the clinical sciences and some of the basic sciences. This is still true and will no doubt continue well into the millennium.

Great advances have been made in basic science areas such as immunology, pharmacology, and microbiology because of the advent of recombinant DNA techniques and other advanced technologies. The basic science teaching, if we can call veterinary public health
a basic science, began to shrink to make way for hitherto unheard of courses like problem solving, ethics, practice management, animal behavior, and informatics, and the more specialized clinical courses such as production management, oncology, cardiology, anesthesiology, and exotic and laboratory animal medicine. This downsizing of some traditional areas was not all bad, because many of them were overtaken.

Despite this reluctance to change, curriculum review is an ongoing, albeit contentious, process. The curriculum is under the control of and jealously guarded by the faculty at all the schools of veterinary medicine with which I am familiar. Because of our large teaching hospitals, clinicians make up approximately half of most faculties, so there is some danger that curricula in veterinary schools can become skewed toward the clinical sciences. Clinical faculty are not, however, unreasonable, and most are aware of the increasing importance of public health and epidemiology in our modern society. We in public health occupy a unique position in veterinary schools in that we sit with one foot in the basic sciences and one foot in the clinical sciences. Therefore, it is up to us to continuously demonstrate our importance and relevance to all members of the academic community to ensure support for our programs. Also, we in public health must likewise be sensitive to the need to create a balanced curriculum that does not overload veterinary medicine at the expense of biomedical and basic sciences.

The size and content of public health and epidemiology courses in a curriculum implies that their presence is not debatable. One particular threat to public health as a separate academic subject is the notion that public health is taught across the entire curriculum in all disciplines and courses. For example, the dermatologists will teach the public health aspects of ringworm, parasitologists will teach the prevention of visceral larval migrans, and microbiologists will speak to the epidemiology of *Borrelia burgdorferi* infections. This is just not true, and meticulous reviews of curricula will substantiate this. Let us take, for instance, an animal, or public practice. And finally, we must seek to retain and grow the public health aspects of public health at university and national levels. We must continue to have advocates for veterinary public health and epidemiology does not lend itself to the epidemiology in our modern society. We in public health occupy a unique position in veterinary schools in that we sit with one foot in the basic sciences and one foot in the clinical sciences. Therefore, it is up to us to continuously demonstrate our importance and relevance to all members of the academic community to ensure support for our programs. Also, we in public health must likewise be sensitive to the need to create a balanced curriculum that does not overload veterinary medicine at the expense of biomedical and basic sciences.

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Ten great veterinary public health/preventive medicine achievements in the United States, 1901 to 2000

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Since the beginning of the 20th century, veterinarians have contributed to the health and welfare of animals, humans, and the environment. In fact, that century marked nearly the entirety of American veterinary medicine to date, as the American Veterinary Medical Association was christened in 1898 (subsequent to its origin in 1863 as the United States Veterinary Medical Association), and there were few graduates of American veterinary colleges until the early 1900s. At the dawn of the century, nearly all veterinarians were engaged in private general practice, with horses being the focus of those practices. Today, more than 70,000 veterinarians in the United States are engaged in a wide variety of private, public, corporate, and government endeavors and may pursue one of 20 board specialties. Among the first of these board specialties was the American College of Veterinary Preventive Medicine (ACVPM), officially recognized by the AVMA in 1951. The Apr 2, 1999, issue of the Centers for Disease Control and Prevention's Morbidity and Mortality Weekly Report celebrated the 20th century’s greatest public health achievements in the United States. The ACVPM’s 50th anniversary of its founding provides a similarly fitting occasion to identify and celebrate a few of the many veterinary public health/preventive medicine accomplishments during the past century. Although it would be impossible and perhaps inappropriate to exhaustively list or prioritize those contributions within this text, we offer this categorical summary of some of the more important.

Animal Disease Eradication

Largely attributable to the efforts of local, state, and federal veterinarians, the following diseases were eliminated (year of elimination is in parentheses) from animal populations within the United States:

- Contagious pleuropneumonia (1892)
- Fowl plague (1929)
- Foot and mouth disease (1929)
- Glanders (1934)
- Dourine (1942)
- Cattle tick fever (1943)
- Vesicular exanthema of swine (1959)
- Screwworm myiasis (1959)
- Sheep scabies (1973)
- Exotic Newcastle disease (1974)
- Classic swine fever (hog cholera, 1978)

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Laboratory Animal Science

The first professor of laboratory animal science in the United States was Dr. Carl Schlothauer, appointed in 1945 at the University of Minnesota. Dr. Charles Griffin oversaw the development of pathogen-free animal colonies at the New York State Board of Health Laboratories from 1919 to 1954. Other veterinary pioneers in laboratory animal medicine included Dr. William Thorp at the National Institutes of Health, Dr. James Steele at the Centers for Disease Control and Prevention, and Dr. Karl Meyer at the University of California at San Francisco.

Infectious Disease Control

In 1900, tuberculosis was the single leading cause of death in humans in the United States and commonly resulted in malformations in the bones of children. Of this disease burden, 40 to 50% was reported to be bovine in origin. Constant veterinary disease control measures have reduced this prevalence to near zero among Americans and marked the passing of the hunchback. The early 1900s also saw the discovery of the etiologic agents for many prevalent animal diseases. Among these were African horse sickness (1900), rinderpest (1902), sheep pox (1902), rabies (1903), hog cholera (1903), and the first discovery of a viral cause of a cancer, fowl leukosis (1908). On a broader scale, the first cancer-preventing vaccines, which are for protection against Marek’s disease and feline leukemia virus, were developed by veterinarians and are contributing to the development of human applications.

Livestock Herd Health and Production Optimization

In 1937 and 1938, Dr. C.L. Cole, who was at the North Central Experiment Station at Grand Rapids, Minn, was the first to demonstrate that large numbers of cows could be bred successfully by artificial insemination. The first calf sired by artificial insemination of frozen semen was born in 1953. A 10-year dairy production study published in the late 1940s noted that among the many benefits of annual physical examinations for dairy cattle was an average increase in milk production by 40 percent.

Food Safety (Human)

Although the 1904 publication of Upton Sinclair’s provocative book The Jungle led to the dismissal of Dr. Daniel E. Salmon from the fledging Bureau of Animal Industry, the resultant public furor successfully reinvigorated his mission and facilitated the promulgation of the Meat Inspection Act of 1906. Dr. Salmon’s total contribution to foodborne disease control was considered so valuable that the Salmonellae spp were named for him. Montclair, NJ, was the first community to
institute routine microbiologic examination of milk in 1900; in 1908, Chicago was the first to require pasteurization of dairy products, and in 1948, Michigan became the first state to implement a state-wide milk pasteurization law. In the 1920s, veterinarians also accomplished the basic work in developing the United States Public Health Service Milk Ordinance and Code. Although slow to achieve industry acceptance, irradiation of food has been shown to have substantial beneficial effects on the safety and quality of many foodstuffs. Previously approved for items such as spices, fruits, vegetables, and poultry, ionizing radiation was approved for use in 1999 to reduce bacterial loads on frozen raw meat and meat by-products.

Recognition and Enhancement of the Human-Animal Bond
Throughout recorded history, mankind has befriended and benefited from its association with animals. Indeed, the histories of all animals, including humans, cannot be dissociated. That symbiotic partnership, perhaps the cornerstone of veterinary medicine, became the life work of Dr. Leo Bustad, who once stated, “One cannot have a healthy community without a strong human-animal bond.” From an enhanced understanding of that inextricable bond have evolved such relationships as guide dogs for the sight and hearing impaired and military working dogs. Further, the positive physical and psychologic benefits of these human-animal relationships, such as the lowering of blood pressure, and as companions for elderly and ill people, have been described.

Border Inspection/Surveillance
The USDA has the responsibility for preventing the introduction or reintroduction of foreign animal diseases into the United States. The Herculean proportions of this task are exemplified by the fact that prior to free trade, the United States imported 1.9 million cattle, 700,000 swine, and about 28 million birds annually. Inspecting representative samples of these animals and their by-products is the task of the veterinarians, directly or indirectly, of the USDA. This effort has been greatly aided since 1954 by the USDA Foreign Animal Disease Diagnostic Laboratory on Plum Island, NY, which provides valuable research toward the prevention and control of these biologically and economically devastating diseases.

Surgery and Medicine
In the field of fracture repair, Dr. Otto Stader developed the first steel pin method for external fracture fixation. This was followed in the 1950s by Dr. H. A. Gorman’s development of the first surgically implanted prosthetic hip joint and Dr. F. L. Earl’s discovery of the tranquilizing effects of reserpine. Regional anesthesia via the spinal route was first introduced into the United States in 1926 at a meeting of the American Veterinary Medical Association.

Uniformed Services Veterinary Medicine
In 1916, with the establishment of the United States Army Veterinary Corps, the United States was the last of the industrialized countries to commission a corps of military veterinarians. During World War II, Army veterinarians were credited with providing higher quality rations for troops as well as more space for armaments on cargo ships by thoroughly trimming meat products and freezing them in compact containers. Dr. Robert A. Whitney, Jr. reached the pinnacle of United States health care as Deputy Surgeon General, and later as the Acting Surgeon General in 1993. Today, veterinarians in the United States Army, Air Force, and Public Health Service contribute substantially to military and civilian public health missions, such as human and animal disease control, occupational health, food safety, medical research, deployment health surveillance, and biological warfare-terrorism defense.

Integration With Public Health Practitioners
Under the leadership of Dr. Karl Meyer, an early architect of veterinary public health, the Hooper Foundation of Medical Research became a world’s leading institute for the study of comparative medicine and zoonotic diseases. Additionally, he developed the original curriculum for the University of California School of Public Health. One of the many important achievements by Dr. James H. Steele was the status elevation of veterinarians in the United States Public Health Service from sanitarians to veterinary medical officers. Finally, one of the most concrete examples of this integration is provided by the 1964 publication of Dr. Calvin Schwabe’s seminal work, Veterinary Medicine and Human Health.

Historically, the term public health has referred to the process of the betterment of groups of humans through medical assessment, surveillance, research, and intervention (primarily by physicians) and that veterinary public health applied exclusively to groups of animals. Evidence of the integration of these activities is provided by the ACVPM’s 1989 definition of veterinary preventive medicine. In essence, veterinary preventive medicine is an integral component of the process of improving animal and human health through the prevention and control of animal diseases, infectious waste contamination, and related human diseases. The future of this integration was eloquently stated by Dr. Calvin Schwabe:

The real challenge of one medicine derives, therefore, from the fact that veterinary medicine, like human medicine, is a human activity which was created by man mostly for its positive effects upon man’s physical and mental well-being, that is his own health. This is not to say veterinary medicine’s creation did not also reflect concern for other animals’ well-being, because it did so in those circumstances where man closely identified himself with other animal species, as he did, for example, in creating many of his religions. Realization that veterinary medicine is a human health profession, however, whatever these additional qualities, extends the social consequences of one medicine far beyond most current perceptions of each of its branches functioning separately.

References


