International programs and veterinary public health in the Americas—Success, challenges, and possibilities

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Abstract

The veterinary public health (VPH) program at the Pan American Health Organization (PAHO) began in 1949 when an arrangement with the newly founded World Health Organization made PAHO its Regional Office for the Americas to serve as the specialized health agency both for the Organization of American States and the United Nations. It started as a Section of Veterinary Medicine to help eradicate rabies on both sides of the US-Mexico border, and PAHO grew to be the biggest VPH program in the world. By providing a political and technical base, PAHO assisted its member states to organize and develop their national VPH programs and activities, and it provides technical cooperation and works with their national counterparts to solve national and local problems.

In the 1980s and 1990s, PAHO concentrated that cooperation on several, specific needs: the elimination of dog-transmitted human rabies, hemispheric eradication of foot-and-mouth disease (FMD), regional action planning for food safety, control/eradication of bovine tuberculosis and brucellosis, and surveillance and prevention of emerging zoonoses and food-borne diseases. The Pan American centers developed a number of diagnostic antigens and a continental system for the surveillance of FMD and vesicular diseases, using geographic quadrant technology to augment sensitivity, analyze data, and make decisions. Another visible accomplishment is the elimination of hydatidosis in the endemic countries and regions of the southern cone.

In addition, the VPH program of PAHO pioneered the mobilization of the private sector to participate in official programs. Nevertheless, privatization of animal and human health services has had a negative effect on human resources and infrastructure by weakening essential epidemiological functions in some countries.

Today, there is a need for closer coordination between veterinary medicine and medical services. Practically all potential bioterrorism agents are zoonoses, and it is cost-effective to control them at the veterinary level, providing the first line of defense. The opportunities for VPH are boundless, but the challenge is to be able to apply the plethora of available research results and knowledge. What we will need is a new breed of veterinarians who will lead and provide us with a vision, like those we honored in 2005 at the Schwabe Symposium Honoring the Lifetime Achievements of Dr. James H. Steele: veterinarians in

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1. Introduction

It was my good fortune in 1971 that I was asked to represent the Philippine government in the Joint Food and Agriculture Organization (FAO)/World Health Organization (WHO) Inter-Regional Seminar on Zoonoses Control, which was held in Manila at the WHO Regional Office for the Western Pacific. During that meeting, each member state gave a presentation summarizing the zoonoses in their respective countries. I vividly recall that after I gave my report, a tall man sitting at the head table, resplendent in a US Admiral’s uniform, stood up and gave me a standing ovation. Thus destiny intertwined my personal and professional career with Dr. James H. Steele, who institutionalized the link between veterinary medicine and public health as the former head of the Veterinary Public Health (VPH) Unit at the Centers for Disease Control (CDC). From that time to the present, my career as a veterinarian in public health was inspired, shaped and strengthened by Steele, an outstanding leader who embodied, according to Charles de Gaulle, in his book The Edge of the Sword, a manual of leadership “like certain men have, one might say almost from birth, the quality of exuding authority, as though it were liquid, though it is impossible to say precisely [of] what it consists... Authority” de Gaulle asserted, “is more than the formal power that comes from holding office or rank; it is the informal power that comes from the respect and deference of others and thus can be infinitely greater in impact.”

Not to sound a bit melodramatic, but coming from where I have been, I always feel the profound need to constantly remember my origins and the people who have helped me along the way. Perhaps I would not be in this position today if I had not met Dr. George Beran in the Philippines when I was a young, newly graduated veterinarian in 1964. And, of course, Dr. Calvin Schwabe’s inspiring and scholarly book Veterinary Medicine and Human Health served as my constant companion and guide to steer my career in public health.

First, a brief overview will be presented of the accomplishments of veterinarians in public health from the viewpoint of the Pan American Health Organization (PAHO), the Regional Office of WHO for the Americas. Then will come a personal insight on the challenges and possibilities of veterinary public health today and in the future.

2. PAHO contributions to veterinary public health

The PAHO was founded in 1902 and is probably the oldest international health organization in the world. It started as an agency that would collect and disseminate information on the infectious diseases that were occurring in the Americas and disseminate it so that countries could take the necessary quarantine measures. The formal and legal establishment of the organization as such dates back to 1924 when the countries of the Americas ratified the Pan American Sanitary Code. This code established a set of principles that could guide sanitary practice in the Americas without hindering international trade and communication. Its constitution addresses the responsibility of PAHO to assist the countries in promoting the mental and physical health of their people. When WHO was founded in 1948, an arrangement was reached for PAHO to
become its Regional Office for the Americas. Thus PAHO serves as the specialized health agency both for the Organization of American States and the United Nations. PAHO has 38 member states, all of which participate in its governance, and it has a physical presence in almost every country in the region of the Americas.

My first PAHO assignment in 1978 was in Jamaica in the West Indies as project manager of a United Nations Development Programme (UNDP)-funded Human and Animal Health Project, which included the eradication of bovine tuberculosis and brucellosis, and improved meat hygiene at the slaughterhouses. I was transferred to the regional office in Washington, DC, in 1980 as Regional Advisor in Veterinary Public Health, and eventually became Chief of the program of veterinary public health for the whole of the Americas for 12 years (from 1989 up to my retirement in 2001). I continue to be active by providing periodic consulting.

The panorama of veterinary public health at PAHO that I describe here spans the decades from the 1970s up to the threshold of the 21st century.

The term “veterinary public health,” according to Schwabe (1984), was introduced after World War II by public health administrators in the US Public Health Service to designate those areas of public health in which veterinary medicine shares particular interests. The WHO (2002) describes veterinary public health as “a component of public health activities devoted to the application of veterinary skills, knowledge and resources to the protection and improvement of human health.” According to this WHO description, veterinary public health is a frame of reference whose activities are not limited to veterinarians. Thus veterinary public health provides the conceptual framework for the different health disciplines (veterinarians, physicians, nurses, sanitary engineers, etc.), as well as for politicians and community leaders to work together to address animal and human health issues. An internationally recognized term for more than 50 years, veterinary public health is a brand used to package a defined set of activities to ensure veterinary and medical collaboration in confronting animal and human health issues.

Veterinary public health was institutionalized at PAHO more than 55 years ago. It started as a Section of Veterinary Medicine on 1 July 1949, initially to address the “eradication of rabies on both sides of the US-Mexico border (OPS, 1949).” The member states of PAHO have long recognized that veterinary medicine and public health are inextricably linked, with a shared goal of protecting, promoting, and improving the health and well-being of human communities. This intimate relationship stems from the toll that the zoonoses and food-borne diseases exact in terms of human illness, and the dependence of humans on animals for food, nutrition, socioeconomic development, and companionship. This link provided the conceptual and institutional underpinnings for veterinarians to work and pursue careers as part of the public health team (Steele, 1976).

The then Director of PAHO, Dr. Fred Soper, designated Dr. Benjamin D. Blood, a US veterinarian, to organize the program, whose first task was to “collect and compile information from each Pan American Nation concerning facilities available for implementing veterinary public health activities.” The program had a total budget of $14,800 in 1950. In turn, it was Dr. Pedro N. Acha, a veterinarian from Peru, who transformed veterinary public health at PAHO from a concept into a full-fledged, comprehensive special program in animal and human health, politically under the Director of PAHO. It reached its zenith in the 1980s, in terms of personnel and funding, through the dynamic and creative leadership of Dr. Acha and his cohort of able veterinarians. By the 1990s, the program had an annual budget of almost $10 million, 80% of which were extra-regular funds, and an international staff of some 66 veterinary public health advisors, most of whom were veterinarians.

Because PAHO is a medical organization dedicated to public health, veterinary public health had to compete constantly for budget and space, and veterinarians had to demonstrate, on a daily
basis, that they were needed and essential to the work of PAHO member states. How the PAHO program grew to such magnitude, the biggest veterinary public health program in the world, is a tribute to the member states’ recognition of the need for intersectoral collaboration between health and agriculture, and testimony to the vision, political, and managerial skills of the program’s veterinary leaders.

PAHO provided the political and technical base for the development and strengthening of veterinary public health in the Americas, and assisted member states to organize and develop their respective national veterinary public health program and activities. At the behest of its member states, PAHO established the Pan American Foot-and-Mouth Disease Center (PANAFTOSA) in Rio de Janeiro, Brazil, in 1950 and the Pan American Zoonoses Center (CEPANZO) in Buenos Aires, Argentina, in 1956, which in 1991 became the Pan American Institute for Food Protection and Zoonoses (INPPAZ). These Pan American centers of excellence formed an integral part of the PAHO veterinary public health program.

Since 1968, the Director of PAHO has convened the Inter-American Meeting, at the ministerial level, in Health and Agriculture (RIMSA). This unique forum puts into action collaboration between health and agriculture sectors at the highest political level. In the RIMSA meeting, which convenes every 2 years, the ministers of health and agriculture of the Western Hemisphere discuss current issues of mutual interest and how they can act collectively to address them, particularly issues related to food safety and zoonoses (Roses Periago, 2003).

The organizational structure of the PAHO veterinary public health program consists of a coordinator at the headquarters in Washington, DC, the two Pan American Centers, and the country and inter-country veterinary public health advisors. Up to 1999, the program had a staff of some 50 full-time professionals (mostly public health veterinarians) and more than 100 support staff at the centers. Almost all are at the operational level to provide sustained support to national programs. At the regional office, the veterinarians assist in planning, policy-setting, allocating resources, and providing technical guidance, orientation, and support to the operational staff (Arambulo, 1993).

Clearly, PAHO is an inter-governmental organization whose staff members, including those in veterinary public health, are considered international civil servants. The staff provides technical cooperation and works with their national counterparts to solve national and local problems. They do not intervene directly with their technical expertise, but instead have to persuade and convince their counterparts and the respective national authorities. To do this, they need diplomatic, political, leadership, and managerial qualities, in addition to the technical expertise veterinarians inherently possess, in order to be able to implement program activities. Technical cooperation involves mobilizing resources; disseminating information; developing policies, plans, and norms; organizing training; promoting research; and providing persuasive expert advice. In the 1980s and the 1990s, the PAHO veterinary public health program concentrated its technical cooperation on several, specific strategic imperatives: the elimination of dog-transmitted human rabies, hemispheric eradication of foot-and-mouth disease, regional action planning for food safety, control/eradication of bovine TB and brucellosis, and surveillance and prevention of emerging zoonoses and food-borne diseases.

One of the central strategies of PAHO technical cooperation is the promotion and application of appropriate technology, defined by the WHO as “a technology that is scientifically sound, culturally acceptable, and a cost that the community can afford.” For instance, the vaccines used for the elimination of dog-transmitted rabies in Latin America and the eradication of foot-and-mouth disease (FMD) in South America were developed at the Pan American Centers, namely the Fuenzalida-Palacios suckling mouse brain (SMB) rabies vaccine and the oil-adjuvanted FMD
vaccine. Both vaccines are still available and used today. Although the cost of vaccination goes down with the reduction of cases, the programs were sustained and their implementation did not falter because (1) preference was not shown for one type of vaccine over the other and (2) new vaccines became available. This program followed what Schumacher (1973) succinctly points out: programs should not rely on single solutions sometimes imposed through foreign aid or sheer novelty.

In addition to the rabies vaccines, the Pan American centers developed a number of diagnostic antigens, such as virus infection associated (VIA) antigen for the differentiation of FMD viral and vaccine antibody activities, and Arc-5 antibody for the diagnosis of cystic hydatid disease due to *E. granulosus*. A continental system based on data reliability for the surveillance of FMD and vesicular diseases was developed using technology available at the time (e.g. geographic quadrants), technology that now includes global positioning systems (GPS) and microcomputers, to augment sensitivity, analyze data, and make decisions. It is our experience that progressive adaptation of proven technology and reliable data are keys to program success, not sporadic scientific breakthroughs.

The strategic and sustained application of the wherewithal, developed with PAHO technical cooperation in veterinary public health, have had significant success. In 2006, several countries and regions in South America are free of FMD, a status internationally recognized by the World Organization for Animal Health (OIE), the technical arm of the World Trade Organization (WTO) in matters related to animal health. Chile is free without vaccination. Argentina, Uruguay, Paraguay, northwest of Colombia, and two-thirds of the territory of Brazil (from Sao Paulo to the southern states) are free with vaccination. Thus at the beginning of the new millennium, an area of some 5.8 million km² with 145 million head of cattle was officially free of FMD. There have been periodic re-introductions in these countries, but the status of being internationally free of FMD was regained through systematic vaccination and selective use of sacrifice of infected and exposed animals, without compromising the local genetic stock (PAHO, 2003a).

No doubt the success in eradicating FMD in most of South America in addition to the traditional non-tariff barrier to agricultural trade both contributed in no small measure to export and livestock production. In 2005, *The Economist* (Special report) referred to the inexorable rise of Brazil as an agricultural superpower. Brazil became the world’s biggest fresh beef exporter in 2004, worth $3 billion (total beef export including processed was $8 billion). Its poultry and pork exports rank first and second in the world, respectively. Brazil is the host country to PANAFTOSA of the PAHO veterinary public health program, and has strongly supported the hemispheric plan for the eradication of FMD.

Another visible accomplishment is the elimination of dog-transmitted human rabies in Latin America, a program launched in 1983 (OPS, 2004). Initially, the goal was to eliminate rabies through mass dog vaccination campaigns in capital cities and urban areas where more than 90% of human cases were due to exposure to dog rabies. By 1995, 19 of the 21 capital cities in Latin America were rabies free. In the last 20 years, the number of cases of human and dog rabies was reduced by about 90%, from an average of 355 annual cases to 35 (between 1982 and 2003). Dog rabies cases alone were reduced from 15,686 annually to 1131 cases, a reduction of 93% during the same period. Around 4 million dogs are vaccinated every year, and 90% of the vaccines used are still the Fuenzalida-Palacios SMB vaccine. Some 1 million persons are given post-exposure rabies treatment annually. In the region, seven countries still use the SMB vaccine, but the rest of the countries are shifting in an orderly transition to tissue culture vaccines. The main factor in the choice is cost, but both SMB and tissue culture vaccines are available.
Another zoonosis that has been susceptible to eradication at the veterinary level is hydatidosis in the endemic countries and regions of the southern cone. Uruguay used to have the highest rate of human hydatidosis in the world until a 5-phase, self-sustaining program was launched in 1990 that brought the number of human surgical cases from 550 prior to the program to 246 in 1999. The over-all prevalence in dogs, the primary source of infection, was reduced from 10.7% in 1991 to 0.74% in 1997. Successful local programs are ongoing in the provinces of Rio Negro, Chubut, and Tierra del Fuego in Argentina, and in Regions X, XI, and XII in Chile. New vaccines against the parasite are also being field tested in Argentina and Chile—in juxtaposition with ongoing programs (Fernandez, 2001). Yet another significant success is the control of food-borne diseases in Latin America and the Caribbean, through epidemiological surveillance and better notification. Many more successes exist (PAHO, 2003b).

Simultaneously with these accomplishments, the economic crisis of the 1980s led all the countries of the region to introduce stabilization and adjustment programs that have produced significant reforms in all sectors. “Privatization” led to reforms in trade, finance, banking, agriculture, health, education, etc. While it can be shown that in some countries of the world these adjustment policies have been accompanied by improvement in social indicators, this has not always been the case. The perception in the Americas is that there has been more inequality and deterioration of social services as a result of privatization, especially in disease surveillance, prevention, and control programs. Both the health and agriculture sectors have been caught up in a process of reform to improve efficiency and respond to social needs. The macroeconomic adjustments with regard to the role of the state in service provision have directly impacted both veterinary and human health services.

The VPH program of PAHO pioneered the mobilization of the private sector to participate in official programs. In an unorthodox way, PAHO invited the representatives of national livestock producers of member states, in consultation with their respective governments, to jointly participate with the official sector in the meetings of the South American Commission for the Control of Foot-and-Mouth disease (COSALFA). The participation of both the official sector and the private livestock producers jump started the national FMD control programs, moving them forward to the eradication mode.

Nevertheless, the process of privatization of official animal and human health services has had a negative effect in terms of human resources and infrastructure. Some essential functions, like epidemiological surveillance and normalization, have been weakened or have altogether disappeared in some countries. Most small producers, which constitute the majority of the livestock farmers, do not have the purchasing power to access private services, in effect marginalizing them without state intervention. For instance, in a country in the Andean region, the abrupt privatization of animal health services without providing an effective transition lead to the disappearance of its epidemiological surveillance system. As a result, FMD was introduced from a neighboring infected country. In the absence of a surveillance system, the disease spread throughout its national territory in a span of 3 weeks before even being detected, after almost 15 years without a case of FMD. The challenge facing many developing countries today is to develop alternative models for an optimum private initiative and public sector mix to ensure the effective delivery of social services.

3. Veterinary public health challenges and possibilities

Today more than ever there has been a need for closer coordination between veterinary medicine and medical services. This is self-evident with the contemporary issues that confront
us, such as the emerging zoonoses and the clear and present threat of avian influenza causing what many predict could become a worldwide human pandemic (Anon., 2004). It will be unlike the swine flu episode of 1976, dubbed as the “epidemic that never was” (Neustadt and May, 1986).

In addition, practically all of the potential bioterrorism agents are zoonoses (Crawford, 2003). In food safety, veterinarians have the marginal edge in the strategy of “from farm to table.” With the constant threat of old and new zoonoses, surely it is both cost-beneficial and cost-effective to control zoonoses at the veterinary level, providing the first line of defense before they spill over to humans. According to a recent report by Dutch scientists, “our conclusion is that vaccination of poultry can prevent a major outbreak of pathogenic avian flu viruses.”

The opportunities for veterinary public health are boundless, but veterinarians initially had to compete to demonstrate that they could do the job. The challenge of the future is not more technical expertise, of which the present generation of veterinarians is richly endowed, positioning them at the cutting edge of science and technology. The challenge is to be able to apply the plethora of available research results and knowledge toward improving social disparity and contributing to national development. Today, there appears to be a crisis of leadership in veterinary public health. Leaders are needed who will consolidate the accomplishments and successes, and bring them to new and greater heights.

During the celebration of the 50 years of VPH in PAHO, held in 2000 in Panama City, Dr. George Alleyne, then director of PAHO, expressed with optimistic exuberance that the “future of veterinary public health in the Americas is indeed brilliant” He referred to the PAHO centennial in 2002, and “the hope that 50 years from now our successors will gather in one of our countries to celebrate the 100 years of our veterinary public health program and give an account of how my [our] dreams have come true and how other new ones have also been achieved. But for this to occur we will need constancy of purpose, sharp focus to our programs, and a firm adherence to that spirit of Panamericanism, which must be our watchword and motto.”

Let me conclude with the words of Dr. Lonnie King, Dean of the College of Veterinary Medicine of Michigan State University, in his address to the OIE in Paris in 2004: “As veterinary services and animal health organizations attempt to respond to a new era of emerging and re-emerging zoonotic diseases, their ability in forming new strategic partnerships will be paramount.” Nonetheless, like the proverbial writing on the wall, we should heed the words of Dr. Frederick Murphy, Dean Emeritus of the College of Veterinary Medicine University of California Davis, in the Institute of Medicine report in 2002 on the emergence of zoonotic diseases. Murphy candidly warns us of the “danger of too many researchers sitting in front of computer screens, modeling diseases, instead of being out there in the field.” What we will need is a new breed of veterinarians who will lead and provide us with a vision, like those we honored in 2005 at the Schwabe Symposium Honoring the Lifetime Achievements of Dr. James H. Steele: veterinarians in public health who will be in the forefront of policy setting, decision-making, and allocation of resources, and veterinarians who will articulate and provide a strategic direction to our unique professional skills, and thus consolidate our leadership role in the highly competitive field of animal and human health.

**Conflict of interest**

Dr. Arambulo does not have a financial or personal relationship with other people or organisations that could inappropriately influence or bias the paper entitled “International programs and veterinary public health in the Americas—Success, challenges, and possibilities.”
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