Veterinary public health: perspectives at the threshold of the 21st Century

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Summary: Veterinary public health (VPH) is a term officially used by the World Health Organisation (WHO) to provide a conceptual framework and programmatic structure for those public health activities which involve the application of knowledge, expertise and resources in veterinary medicine towards the protection and improvement of human health. It serves as the "linkage" between agriculture and public health. The principles on which VPH is based are deeply rooted in the biological, physical and social sciences, and are widely shared in agriculture, medicine and the environmental sciences. It involves not only veterinarians but also professionals from a host of other disciplines.

VPH is dynamic in its scope and functions, and future perspectives are defined by the changing policy and priorities of the health and agriculture sectors. VPH continuously explores the horizons of public health needs for new opportunities in which veterinary medicine has a comparative advantage. The control and eradication of zoonoses and food protection remain the prominent functions of VPH. In the region of the Americas, VPH forms one of the central approaches in the strategic orientation and programme priorities of the health sector, having three strategic foci: the elimination of urban rabies, the eradication of foot and mouth disease, and food protection. The programme of technical cooperation covers the following components: zoonoses, foot and mouth disease, food protection, biomedical models, education and training in veterinary public health, and the development of veterinary public health services.

KEYWORDS: Biomedical models - Food protection - Future perspectives - Veterinary public health - Zoonoses.

CONCEPTUAL FRAMEWORK

The term "veterinary public health" (VPH) was first officially used in 1946 during the meeting which gave charter to the World Health Organisation (WHO), to provide a conceptual framework and programmatic structure for those public health activities which involve the application of knowledge, expertise and resources in veterinary medicine towards the protection and improvement of human health (14, 15, 16).

Veterinary public health stems from veterinary medicine, considered the "broadest and most comprehensive of the health professions", and the "bridge between biology and medicine", the ultimate objective of which is to promote well-being and the quality of human life (11, 12). The objectives of veterinary medicine are fulfilled by working
to enhance the health, welfare, productivity and utility of animals, as well as the safety of animal products for human use (12, 13). Veterinary public health provides the "linkage" between agriculture and public health. The principles upon which it is based are deeply rooted in the biological, physical and social sciences, and are widely shared in agriculture, medicine and the environmental sciences. Veterinary public health involves veterinarians, animal health scientists and professionals, medical specialists, environmental and sanitary engineers, animal health and veterinary assistants, and a host of biological, physical and social scientists, many of whom are neither holders of a veterinary medical degree nor practitioners of veterinary medicine (12).

Veterinary public health is an abstract concept. It defines a broad set of activities, tasks and responsibilities in animal health which directly relate to public health. Veterinary public health serves as a focal point to channel independent efforts and resources in the various sectors, institutions and disciplines involved in animal health and production towards the improvement of human health (1). Health is defined in the WHO Constitution as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". In 1978, WHO member countries adopted "primary health care" as the key to achieving the goal of "Health for all by the year 2000". Achievement of this goal does not imply that, by 2000, there will be no more diseases or infirmities. But rather, that the majority of the population of the world will have access to basic health services and lead economically productive and socially satisfying lives. Moreover, primary health care recognises that human health cannot be achieved by the health sector alone, but requires cooperation of the developmental and social sectors, among them agriculture and animal husbandry, thus putting in context the functions of veterinary public health in the achievement of the goal of "Health for all by the year 2000".

Primary health care provides a continuum in which health, social well-being and economic development are seen to be inextricably intertwined. The primary health care approach defines four central strategies: intersectoral collaboration, community participation, appropriate technology, and technical cooperation among countries. These strategies provide the basic structure underlying veterinary public health action.

VPH operationalises the strategy of intersectoral collaboration between agriculture, animal health, education, the environment and human health. The most visible functions of VPH are related to the control of animal diseases transmissible to humans (zoonoses), food protection, the use of animal models for human diseases and the study and control of the impact of animal populations on environmental health. However, its functions go beyond these traditional areas into epidemiological surveillance, vaccine development, biological safety and standardisation, research on human fertility and reproduction, pharmaceutical evaluation, environmental health monitoring, technology assessment, mental health, nutrition and tropical diseases inter alia (1).

SCOPE AND FUNCTIONS

The scope and functions of VPH are variable, and will depend on the policy and priorities of the health and agriculture sectors. Unlike the established basic specialties in veterinary medicine (e.g. pathology, microbiology, parasitology, physiology, anatomy, pharmacology), VPH must constantly adapt to rapidly changing needs and priorities. It has to continuously explore the horizons of public health needs for new
opportunities where veterinary medicine has a comparative advantage over the other professions and disciplines. This creative potential is a fundamental requirement for VPH to maintain relevance and the space it occupies.

Food protection and the control and eradication of zoonoses remain functions of major importance in VPH. At the Pan American Health Organisation (PAHO), which is also the WHO Regional Office for the Americas, for instance, the programme of technical cooperation in VPH includes the following components:

- Zoonoses
- Foot and mouth disease
- Food protection
- Biomedical models
- Veterinary public health services
- Education and training in veterinary public health.

ZOONOSES

Of the more than 200 zoonoses in existence, rabies, equine encephalitides, brucellosis, bovine tuberculosis (TB), leptospirosis, anthrax, hydatidosis, taeniasis/cysticercosis, trichinellosis, larva migrans, and toxoplasmosis have been identified by PAHO member governments as priorities for veterinary public health.

The governments of the countries of Latin America made a collective policy decision in the early 1980s to eliminate urban rabies by 1992. An evaluation conducted in 1990 showed that 16 of the 30 major capitals in the region are free of human rabies. Seventy percent of reported cases of human rabies occur in communities with populations of 50,000 and less. However, vampire bat-transmitted rabies is increasingly becoming a public health problem, in addition to being an animal health problem. In 1989 and 1990, two separate outbreaks were reported in the Amazon region involving the death of some 75 people (8). Deaths from human rabies in Latin America decreased from 340 in 1980 to 265 in 1989; the rate of deaths from rabies in 1980 was thirteen persons per 100,000 population, while in 1989 this had decreased to three persons per 100,000 in the 414 large and principal cities of Latin America (2).

In 1991, the countries of the region of the Americas recognised that given the level of incidence of bovine TB, it is more cost-effective to eradicate the disease than to maintain the existing control programmes. The governments have decided to adopt a policy of eradication of bovine TB, and requested PAHO to collaborate with the respective national authorities in developing strategies and a plan of action (5, 7).

The governments of Latin America and the Caribbean, in collaboration with PAHO, are using thematic focus based on the feasibility of zoonosis eradication to concentrate efforts and direct the use of limited resources to areas where they would have the most significant impact. Actions are intended to include the development of programmes for the control and/or eradication, epidemiological surveillance and diagnosis of zoonoses (10).
Foot and mouth disease

Foot and mouth disease (FMD) is still included in the WHO official list of zoonoses, but occurrence in humans is rare and considered as something of a medical curiosity. It is, however, an important disease of livestock, particularly cattle, causing prodigious losses in meat and milk production. In addition, it disrupts international trade with negative consequences for the economies of countries where the disease is endemic. In the Americas, FMD is considered a priority for veterinary public health, since it contributes to the problem of human malnutrition by exacerbating the availability of the animal protein considered essential in the human diet. FMD is considered as an eradicable disease, and PAHO member governments have taken the policy decision to eradicate the disease by 2000 (9). Actions are directed towards eradicating the disease in countries where FMD is present, strengthening epidemiological surveillance for FMD and other vesicular diseases, and protecting and expanding areas which are free of FMD.

FOOD PROTECTION

Food protection is one of the most important priorities of the health and agriculture sectors in practically all countries, because of the millions of human cases of diarrhoea due to food-borne diseases, and the billions of tons of food lost each year from contamination and improper handling. Food protection is also the most elusive of these priorities, lacking definition and involving a number of sectors and disciplines. Logically, this function should belong to VPH, since veterinarians are particularly well-placed to make a significant contribution toward solving the problem of food-borne diseases. Food hygiene and safety are significant facets of veterinary education and there is a long tradition of veterinarians managing food safety programmes designed to protect public health. The scope of action of veterinary public health, in concert with other sectors, programmes and disciplines, is to ensure the safety of all foods throughout the process from production, processing and distribution to consumption. This includes the organisation of an integrated and comprehensive national food protection programme, the development and strengthening of analytical services, the application of the hazard analysis critical control point (HACCP) method in inspection services, the surveillance and control of food-borne diseases, and consumer protection through community participation.

BIOMEDICAL MODELS

Laboratory animals are indispensable in biomedical research as models for the study of human health problems, in the quality control of vaccines and biologicals for public health use, and in the diagnosis of certain human diseases. Although the current trend is to reduce the use of animals for experimental purposes, the need for biomedical research will continue albeit under strictly monitored circumstances. The development of vaccines against a number of important human diseases, such as malaria and hepatitis, requires the use of non-human primate species which may be endangered or threatened.

Given the future trend towards a more rational use of laboratory animals for research purposes, VPH activities should be in the area of biomedical models. This
should include: the development of integrated projects to ensure the availability of non-human primates through conservation in natural habitats, reproduction in captivity and semi-captivity; rational use of such animals; the improvement of laboratory animal facilities; and the development of in vitro models (4).

EDUCATION AND TRAINING

One of the recommendations put forward in providing future perspectives for veterinary medicine was to change the veterinary study curriculum from almost total concentration on clinical practice to include education for important public sector needs for veterinarians (11). It was noted that despite the long tradition of activity within the veterinary profession on food hygiene and safety, veterinary schools have allowed teaching and research programmes on food hygiene to atrophy and some to disappear altogether. Few veterinary graduates possess even a basic grasp of the nature of VPH, and consequently few express an interest in embarking on a career in this field. VPH activities will necessarily involve the development of teaching materials on VPH for use not only in veterinary schools but also in graduate schools of public health, and the promotion of courses which underpin the concept of veterinary public health, e.g. epidemiology, organisation and strategic planning, economic analysis and rational decision-making, the application of HACCP in food protection, and policy analysis. The objective is to provide veterinary graduates with some of the knowledge and expertise needed to turn the concept of veterinary public health into operational programmes.

VETERINARY PUBLIC HEALTH SERVICES

There are ample opportunities to utilise the infrastructure which exists in animal health services to provide human health services and reach populations particularly in underserved areas. Animal health laboratories possess the capacity to perform public health functions such as water and food analysis, parasitological examination, blood counts, urinalysis, serology, etc. In a number of animal health laboratories in the Americas, some 10% of samples examined annually are for public health purposes. The facilities for the delivery of animal health services are especially suitable for bringing primary health care workers and vaccination into areas not usually reached by traditional health providers. Programmes on social communication for education in animal health are an effective means of conveying health messages. Epidemiological surveillance of animal diseases (such as the grid system used in foot and mouth disease and vesicular disease) could integrate information to assess risk factors for human health. VPH activities should be directed towards identifying resources used for animal health purposes which could be mobilised to develop and strengthen local human health systems and to develop alternative institutional paradigms (6).

As a matter of policy, PAHO operationalises activities between technical programmes. Recently, Veterinary Public Health, Transmissible Diseases, and Environmental Health programmes have developed a horizontal inter-programme approach for the control of taeniasis and cysticercosis which can be applied by local health services (Sistemas locales de salud: SILOS). Opportunities exist in veterinary
public health for inter-programme work with the programmes on Food and Nutrition, Maternal and Child Health, Chronic Diseases, Communicable Diseases, Health Promotion, Health Situation and Trend Assessment, Health Policies Development, Health Manpower Development, Health Service Development, and Scientific and Technical Health Information.

The future will require a more active role to identify specific opportunities for VPH and develop corresponding programmes.

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PERSPECTIVES DE LA SANTÉ PUBLIQUE VÉTÉRINAIRE A L'AUBE DU XXIᵉ SIÈCLE. – P.V. Arámbulo III.

Résumé: L'expression «santé publique vétérinaire» (SPV) est officiellement utilisée par l'Organisation Mondiale de la Santé (OMS) pour désigner le cadre conceptuel et la structure de mise en œuvre des activités de santé publique qui utilisent les connaissances, les compétences et les ressources vétérinaires pour protéger et améliorer la santé de l'homme. La SPV est un trait d'union entre l'agriculture et la santé publique. Les principes sur lesquels elle repose ont leurs racines dans les sciences biologiques, physiques et sociales et se retrouvent largement dans les domaines de l'agriculture, de la médecine et de l'environnement. Elle ne fait pas uniquement appel aux vétérinaires mais à nombre de professionnels d'autres disciplines.

Dans son rôle et son champ d'application, la SPV se caractérise par son dynamisme. Ses perspectives sont définies en fonction de l'évolution des politiques et des priorités sanitaires et agricoles. La SPV s'attache à connaître en permanence les besoins nouveaux en matière de santé publique, que la médecine vétérinaire est mieux préparée à satisfaire que les autres disciplines. La SPV garde pour fonctions principales la prophylaxie et l'éradication des zoonoses ainsi que la protection alimentaire. Dans les Amériques, elle correspond à l'une des principales orientations et priorités d'action du secteur de la santé, avec trois axes stratégiques : élimination de la rage urbaine, éradication de la fièvre aphteuse et protection alimentaire. Le programme de coopération technique englobe les volets suivants : zoonoses, fièvre aphteuse, protection alimentaire, modèles biomédicaux, enseignement et formation en santé publique vétérinaire et développement des Services de SPV.

MOTS-CLÉS : Modèles biomédicaux - Perspectives - Protection alimentaire - Santé publique vétérinaire - Zoonoses.

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PERSPECTIVAS DE LA SALUD PÚBLICA VETERINARIA EN LOS ALBORES DEL SIGLO XXI. – P.V. Arámbulo III.

Resumen: La expresión «salud pública veterinaria» (SPV) es utilizada oficialmente por la Organización Mundial de la Salud (OMS) para designar el marco conceptual y la estructura de implementación de las actividades de salud pública que emplean los conocimientos, competencias y recursos veterinarios para proteger y mejorar la salud humana. La SPV es un nexo entre la agricultura
y la salud pública. Sus principios de base están fuertemente arraigados en las ciencias biológicas, físicas y sociales y se encuentran ampliamente difundidos en la agricultura, la medicina y el medio ambiente. La SPV recurre no solamente a los veterinarios, sino también a una multitud de profesionales de otras disciplinas.

Su función y su campo de acción se caracterizan por su dinamismo, y sus perspectivas se definen en función de la evolución de las políticas y prioridades sanitarias y agrícolas. La SPV está siempre atenta a las nuevas necesidades de la salud pública, que la medicina veterinaria satisface mejor que las otras disciplinas por estar más preparada para ello. Las funciones principales de la SPV son el control y la erradicación de las zoonosis, así como la protección de los alimentos. En las Américas, constituye una de las principales orientaciones y prioridades del sector de la salud, abarcando tres enfoques estratégicos: eliminación de la rabia urbana, erradicación de la fiebre aftosa y protección de los alimentos. El programa de cooperación técnica incluye los siguientes aspectos: zoonosis, fiebre aftosa, protección de los alimentos, modelos biomédicos, enseñanza y formación en salud pública veterinaria y desarrollo de los Servicios de SPV.

PALABRAS CLAVE: Modelos biomédicos - Perspectivas - Protección de los alimentos - Salud pública veterinaria - Zoonosis.

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