
FAO ANIMAL PRODUCTION AND HEALTH

proceedings

EXPERT CONSULTATION ON COMMUNITY-BASED VETERINARY PUBLIC HEALTH SYSTEMS



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ACRONYMS

BSE	bovine spongiform encephalopathy
CAHW	community animal health worker
CDC	Centers for Disease Control and Prevention
CHW	community health worker
DALYs	disability adjusted life years
EAAP	European Association for Animal Production
GMO	genetically modified organism
HACCP	Hazard Analysis and Critical Control Point (System)
HIA	health impact assessment
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
OIE	World Organisation for Animal Health
PAHO	Pan-American Health Organization
PE	participatory epidemiology
RA	rapid appraisal
SARS	severe acute respiratory syndrome
UVH	urban veterinary hygiene
VPH	veterinary public health
WHO	World Health Organization
WNV	West Nile virus

Opening address

Mr Chairman, Ladies and Gentlemen,

It is with great pleasure that I welcome you all to FAO and to the Animal Production and Health Division for the Expert Consultation on Community-based Veterinary Public Health Systems. A very special welcome to the six experts who have accepted the call to provide their advice on this important process which FAO has set up to gather the most up-to-date, advanced scientific guidance for its programme of work.

FAO takes the instrument of the expert consultation very seriously. You know that the advice you will be generating today and tomorrow will be taken up by the Director-General in the guidance of FAO's veterinary public health programme.

Veterinary public health (VPH) aspects have long been on the agenda of FAO's animal health programme – if we think of the many activities on brucellosis control or on the internal parasite management which have been and are being carried out in many member countries.

Four years ago, however, we decided to give to these activities a more distinct platform for their further development and coordination as well as for their programmatic profile-building. This was done by creating a separate regular programme entity, which we call "Veterinary Public Health and Feed and Food Safety"; and we have supported the creation of a Division-wide interdisciplinary task force on VPH, which is very actively pursuing the entity's agenda. The VPH definition agreed in the 1999 joint FAO/World Health Organization (WHO) expert committee meeting is the relevant basis for the work of the task force; this definition reads: "Veterinary public health is the sum of all contributions to the physical, mental and social well-being of humans through understanding and application of veterinary science."

The task force performs on its programme of work, as is also unanimously recommended by the expert papers submitted to this consultation, using an interdisciplinary and intersectoral approach. I need not dwell on this fundamental requirement, which is certainly not disputed by anyone involved in VPH matters anywhere in the world.

Veterinary public health is an international public good of paramount and increasing importance, and FAO is not only well placed but also firmly committed to strengthening this public good in collaboration with others such as WHO, particularly but not only in the context of the Codex Alimentarius, and with the Office international des épizooties (OIE – World Organisation for Animal Health), in the sanitary and phytosanitary context and in collaboration with national and regional specialist organizations.

To illustrate the importance of VPH incidences and thereby underscore the need for mitigating action, I could quote the example of the impact of the BSE

(bovine spongiform encephalopathy) crisis in the European Union. In a recent study on this prepared by a working group under the leadership of Patrick Cunningham and published by the European Association for Animal Production (EAAP), the annual loss to the European livestock sector as a result of the BSE crisis is estimated at US\$2.75 billion; much of this impact is there to stay long term as a considerable proportion of the by-products used productively before the crisis, such as specified risk materials and meat and bone meal, have now become a considerable cost for the industry and the society. *Nipah*, *Campylobacter*, *Salmonella*, *E. coli*, rabies, Rift Valley fever, SARS and *Taenia* might be other suitable examples to bring home to all concerned that very serious risks are at hand.

In its VPH programme, FAO pays particular attention to animal health related problems and issues as they have an impact on the human population in developing countries. This involves attention to the risks at the level of both production and consumption of food of animal origin, including risks stemming from zoonoses, related to occupational diseases and to environmental health as affected by the health condition of farm animals.

The spectrum of important veterinary public health issues is very large and careful priority setting is required for the most effective and efficient use of scarce available resources. A contribution of this expert consultation to the way by which such priority setting might have to take place is expected.

In many circumstances, and not only in developing countries, the raising of awareness of communities of veterinary public health risks and of ways to manage and mitigate them more effectively is key for the success of VPH programme. This expert consultation addresses this task of community-based work head-on. Community action in veterinary health risk management is multifaceted and multilayered and requires a careful choice of instruments. It requires, in addition to the intersectoral and interdisciplinary approaches already mentioned, effective communication. If schools, i.e. administrators, teachers, pupils and parents, grassroots organizations, cooperatives and other organizations in the areas of services, production, product processing and product retail have to play their role in managing VPH risks, communication is obviously of paramount importance. The same is true for the operation of community-based surveillance and participatory epidemiology. I am very pleased to note that significant inputs on this are available through the expert contributions to this consultation. I am therefore very confident that there will be strong and detailed advice resulting from your discussions – advice on the contents and operations, both medium- and longer-term, of the FAO Veterinary Public Health Programme. I would again like to thank you for your time and effort in this.

Before I turn you over to your Chair, Professor Robinson, I would like to say a few words of recognition directed at a colleague who will soon retire from FAO and to whom the FAO Animal Health Programme, the Animal Production and Health Division and the Organization as a whole owes a great deal. This is Dr Cheneau, Chief of the Animal Health Service for the last 12 years. Yves Cheneau has not only brought FAO's Animal Health Programme into the strong

shape which it currently has, he is also the architect and implementer of the EMPRES-Livestock Programme since it was launched by the Director-General in 1994. He also completed the Divisional Programme by introducing formally the VPH programme entity under his responsibility four years ago. I would simply not like to miss this good opportunity to warmly thank Dr Cheneau very much for all his commitment and leadership.

I would also like to thank the colleagues and their supervisors who agreed to assist the expert consultation with their professional process facilitation skills. These are Marta Bruno and Jan Johnson from the Rural Development Division and JeanPierre Ilboudo and Ester Zulberti from the Research, Extension and Training Division.

I now pass you over to your Chairperson and wish you a very productive session, and I am confident that all arrangements are in place to help you work as effectively as possible.

Dr Samuel Jutzi
Director
FAO Animal Production and Health Division

Summary report

INTRODUCTION

Veterinary public health (VPH) was originally defined in a 1975 Joint FAO/WHO Expert Committee Report as “the component of public health activities devoted to the application of professional veterinary skills, knowledge and resources to the protection and improvement of human health”. A more recent WHO study group report in 1999 expanded this definition to include “the sum of all contributions to the physical, mental, and social well-being of humans through an understanding and application of veterinary science”. This latter report emphasized that VPH would have to develop against a rapidly changing background of population growth, increasing urbanization, and an increasing poverty and technology gap between developed and developing countries as well as changes in land use, the environment and climate.

A community is usually described as a group of people organized into a unit or manifesting some unifying trait or common interest; it may be a locality for which general services are provided such as a district, the most peripheral unit of local government. Community-based VPH systems therefore refer to those services such as zoonoses and food-borne illness prevention and control aimed at improving the overall health of the population.

The majority of developed countries have administrative systems in place to provide a reasonable level of VPH services at national and subnational levels, although at community levels, services may be uneven, minimal or absent. In developing countries and those countries in transition whose infrastructures require rebuilding, VPH services are likely to be deficient at all administrative levels.

Many publications, surveys and conclusions from an FAO/WHO/OIE-sponsored electronic conference on VPH and the control of zoonoses in developing countries (2001) have identified numerous difficulties relating to the effective delivery of community VPH programmes.

These include:

- lack of any organized surveillance programmes;
- focus on task-oriented VPH programmes unrelated to risk-based priorities;
- poorly defined epidemiological knowledge of local VPH problems;
- minimal communication and cooperation between providers of human and veterinary health services;
- lack of VPH educational materials and programmes for extension;
- difficulties in electronic access to science-based current VPH information sources;
- lack of suitably trained individuals at all levels;
- lack of VPH infrastructures at the community level.

The VPH priorities of developed countries in recent years have tended to focus on emerging infections albeit often of low incidence, chemical residues in foods of animal origin, antibiotic resistant micro-organisms and prevention of acts of biological terrorism. These issues are not necessarily the same priorities for developing countries. The latter are faced with long-standing and persistent zoonoses, such as rabies, anthrax, brucellosis, tuberculosis, cysticercosis and echinococcosis. Control and eradication procedures as used in developed countries may not be technically or economically feasible.

Poverty is now being recognized as a major risk factor for zoonoses and food-borne illness both in rural and urban consumers. Livestock offer both a major contribution to the livelihood of the poor, and a pathway out of poverty, but also are a risk to their own health, well-being and performance.

The FAO Animal Production and Health Paper *Improved animal health for poverty reduction and sustainable livelihoods* (2002) offers a number of opportunities to improve animal and, indirectly, human health through supporting poor livestock farmers. The challenge remains as to how to develop low cost yet efficient VPH interventions at the community level.

OBJECTIVES AND PROCEDURES

The objectives of the consultation were to consider and make specific recommendations regarding the delivery of community-based VPH systems, with special emphasis on developing countries in the following major areas:

- surveillance methodologies for zoonotic diseases;
- significance of participatory epidemiology and rapid appraisal techniques;
- public and private VPH community delivery systems;
- monitoring and evaluation of VPH systems;
- current community-based VPH systems in sub-Saharan Africa, including examples from South Africa and the United Republic of Tanzania;
- training and public education in VPH at community levels;
- multidisciplinary approaches to VPH delivery systems at community levels.

Background papers were presented on each of the above topics by invited participants. Each expert was asked to have a minimum of two co-authors or peer-reviewers of their paper. All papers were circulated electronically to consultants prior to the meeting. A brief summary of each paper is included in the following section.

Following a summary presentation of each paper by the primary author, discussions were held with other experts and FAO invited participants and staff. Finally, the experts deliberated and presented their conclusions and recommendations to a plenary session.

SUMMARIES OF PRESENTATIONS AND DISCUSSIONS

Summaries of the papers presented during the plenary sessions are presented below. The full texts of each paper are given in Appendix 3.

Significance of participatory epidemiology in veterinary public health community-based systems – Robinson, Catley and Hird

Participatory epidemiology (PE) is defined as “methods for the collection of action-oriented epidemiological intelligence”. PE builds on existing medical and veterinary knowledge, especially in developing countries where sophisticated data gathering techniques focusing on random sampling of large populations by questionnaires/interviews are often impractical. Essentially, qualitative epidemiological techniques are adapted to gain information from a community using participatory rural appraisal techniques over limited time periods.

Developing countries and those in transition whose economies are undergoing structural adjustment face significant VPH challenges as often well-established, state-funded services have been discontinued or diminished to such an extent that zoonotic disease outbreaks have increased. Community VPH services at district and lower levels are either absent or fragmented.

Zoonotic diseases exert a disproportionate effect on the poor primarily because livestock often underpin the livelihoods of the poor throughout the developing world.

PE has a wide range of applications that could be especially useful in identifying risk factors for zoonoses and other VPH problems. Community participation is now being widely promoted as an important feature in the delivery of veterinary services in developing countries. Therefore, PE seems an essential technique if these services are to be expanded to include VPH. As community animal health workers are now providing veterinary services to many underserved areas of the world, it would seem logical to involve them in PE studies and ultimately in the delivery of basic VPH services.

To gain the maximum advantage of PE for advancement of VPH, joint training of veterinarians and physicians is recommended to improve the identification of local priorities as well as community knowledge, attitudes and practices. “Pilot” VPH programmes based on the results of PE studies should be developed in selected countries representing a range of VPH problems.

Surveillance methodologies for zoonotic disease at community levels – Robinson, Mainzer, Chomel and Bender

Ideally a community-based zoonotic disease surveillance system should be timely, representative, acceptable to the community, flexible, cost-effective and simple. Technically, it should be sensitive (capable of detecting zoonotic disease events) and specific (capable of accurately identifying the zoonotic disease).

Community-based systems differ widely depending on the human and animal populations; unfortunately, systems are usually separate but, ideally, there should be coordination of zoonoses surveillance. Reliance on official (notifiable) reports may lead to a gross underestimation of a disease impact. In these situations, a dedicated epidemiological survey is needed, drawing on a range of resources including livestock owners, community animal and human health workers, paraveterinarians, abattoirs, livestock markets, etc.

In resource-poor regions, simple systems employing existing personnel can be used for both passive and active zoonoses surveillance provided adequate training is given and there is periodic feedback to participants. An initial focus should be on a few major zoonoses.

Sentinel surveillance such as using a free-flying or caged bird for arboviruses is a useful technique. Syndromic surveillance focusing on key signs or symptoms, although non-specific, may well be a useful screening mechanism (e.g. fever, neurological signs). Ideally, any surveillance system should focus on the nature and scale of the known risks for a specific disease.

Finally, at the community level, information collection systems without any actual or perceived actions are very unlikely to be sustainable.

Public and private aspects of veterinary public health delivery systems at community level and monitoring and evaluation of VPH systems –

Willingham, Phiri, Joshi, Githigia and Kyvsgaard

As a result of economic reforms, countries throughout the world have been privatizing their veterinary services whereby commercialized goods and services that benefit individual livestock owners are divested to the private veterinary sector with only the essential, non-contestable “public good” tasks such as environmental and public health provided by the public veterinary health service. Unfortunately, privatization of VPH services in many developing countries, especially in poor, low-potential areas, has become a constraint for poverty alleviation, environmental sustainability, food safety, and zoonoses prevention and control. This is because of the lack of clarity on the appropriate roles of the public and private sectors in delivering VPH services, as well as the lack of tools needed for proper evaluation and monitoring to assure quality VPH service delivery. Remote and marginalized human and livestock populations are generally under-represented in service delivery and information systems and, as a result, suffer from the direct lack of services and pose epidemiologic risks to the national human and livestock populations as a whole. Public sector responsibilities in these remote, marginalized communities can be conducted effectively through the use of contracts with private veterinarians and paraprofessionals for their delivery under the public sector monitoring and supervision, thus making essential services available while enhancing the financial viability of private practice in low-potential areas. With regard to public and private aspects of VPH service delivery and oversight of VPH systems, there are several actions that countries can take to improve the efficiency, effectiveness and sustainability of VPH services including:

- institution of legal frameworks for defining the role of VPH service providers that establish the functions, responsibilities and control of public and private veterinarians and also paraprofessionals in the provision of VPH services as well as guidelines on the roles, inter-relationships and regulations required to link them with the official VPH services;
- strengthening their links with or facilitating the organization of VPH stakeholder associations representing veterinarians, public health physicians,

paraprofessionals, livestock producers, consumers and other relevant groups that can play a key supporting role in VPH service delivery;

- establishing a statutory body representing the interests of all stakeholders with the tasks of obtaining specific commitments, financial resources and institutional and legal authority to implement VPH service delivery while securing sustainability of VPH services through the setting of regulations, monitoring the delivery and results of interventions and providing an enabling environment for the private sector;
- implementation and enforcement of VPH programmes based on priorities established as a result of risk analysis (including participatory techniques) and socio-economic burden assessment of VPH hazards following improvement of information and epidemiological surveillance systems through training of personnel and building of infrastructure as part of the overall decision-support system.

Community public health education in Tanzania: challenges, opportunities and the way forward – Kambarage, Karimuribo, Kusiluka, Mdegela and Kazwala

The livestock subsector, contributes about 18 and 30 percent of the national and agricultural GDP, respectively, and provides food for rural and urban dwellers. Cattle, sheep and goats are kept mainly by rural communities as animal keeping is considered to be both a sign of wealth and social status and a source of income and food.

Public health issues of importance to animal owners and consumers include:

- improper meat inspection and close association with animals;
- poor animal health delivery systems as a result of the withdrawal of veterinary services;
- the presence of zoonotic diseases such as tuberculosis, brucellosis and cryptosporidiosis;
- consumption of raw or undercooked meat, raw blood and milk poses health risks.

Public health education is required to create awareness of the dangers and risks associated with: eating habits; conservation and quality of water sources and the use of latrines; contact with animals (sharing air space); drug residues in food; and the importance of quality meat inspection.

For the future, community public health programmes will require the involvement of a number of players, including animal owners and family members, butchers, food vendors, consumers and policy-makers. The programme will cover the following issues:

- sensitization of trainers of trainees (public) on all relevant public health matters – this can be achieved by making use of members of the community such as community-based animal health workers and field veterinary staff;
- making use of other avenues to create public awareness such as primary and secondary schools, religious and political fora;

- creating the awareness of decision-makers (policy-makers) especially village leaders, ward leaders and staff in local governments/councils;
- complementary aspects such as retraining of meat inspectors and other service-providing cadres who should be engaged to serve as meat inspectors;
- sensitizing consumers or the general public by using television and radio programmes (the latter can be useful to reach people in the villages especially when solar-powered radios are used; this will ensure maximum reach to rural communities). Other dissemination techniques such as posters and leaflets need to be used.

**Community-based veterinary public health systems in South Africa:
current situation, future trends and recommendations – Michel, Meyer,
McCrindle and Veary**

In contrast with most other African countries, the bulk of rural household income in South Africa does not derive directly from smallholder agriculture but a high percentage of rural households are net consumers of food. Almost 70 percent of South Africa's 122.3 million hectares of land surface is not arable, but generally suitable for raising livestock. At the same time, population growth, urbanization and income growth are paralleled by a rapidly increasing demand for food from animal origin. This poses a challenge to the country's agriculture sector to develop sustainable livestock production that contributes to poverty alleviation and ensures access to safe meat for all South Africans.

Currently, the delivery of veterinary public health services in South Africa is uncoordinated and fragmented among several government agencies. Prior to 1994, approved abattoirs with meat inspection were basically non-existent in most rural areas and as a consequence the population in those areas did not have the opportunity to buy safe, inspected and hygienically produced meat but relied on meat originating from informal slaughter. Since 1994, the meat hygiene services have been transformed to include the needs of rural small abattoirs, supported by the revised meat safety act of 2000. Food safety risks in rural communities are multifaceted and relate primarily to informal slaughter of livestock, socio-cultural practices and the informal marketing of foodstuffs and ready-cooked foods. Close animal–human interactions and the consumption of meat and milk from animals raised without any form of veterinary intervention facilitate the transmission of diseases such as bovine tuberculosis, brucellosis, anthrax, listeriosis, leptospirosis, cysticercosis, hydatidosis, larval migrans and rabies. Among the pathogens that generally cause less severe disease but which are more frequently encountered, especially in infants and the elderly, are *Salmonella*, *Campylobacter*, *E. coli* and other enterobacteria.

Plans for the future include:

- the commercialization of livestock production through land redistribution programmes;
- changes in regulations to develop policy, norms and standards for the primary animal health care systems in the rural areas in south and southern Africa as well as to coordinate and audit their implementation;

- urbanization: the formation of densely populated, informal settlement areas on the outskirts of many towns and cities and the growing demand for affordable food has prompted a sharp increase in small and large livestock being held in those areas. A lack of skills relating to animal care and a lack of grazing results in poor animal health and facilitates the circulation of pathogens between animals and humans.
- increasing diagnostic support to the emerging small-scale farmers and a growing export market, both field and laboratory based.

It is recommended that there should be:

- a joint veterinary public health directorate with mandates from national departments of health and agriculture;
- sustainable and commercialized livestock production;
- continued upgrading of unapproved slaughter facilities;
- information and skills training;
- community extension projects on food hygiene.

Multidisciplinary approach to veterinary public health delivery systems at community level: the past, the present and the future of multidisciplinary collaboration in veterinary public health and expected perspectives – Mantovani, Battelli, Caprioli, Cosivi, De Meneghi, Macrì, Pasquali, Poglajen and Seimenis

“The sum of all contributions to physical, mental and social well-being of humans through an understanding and application of veterinary science” is the last definition of VPH, given by WHO in 1999. The concept places strong emphasis on the need for wider links between human and animal medicine, and calls for the involvement of disciplines such as agriculture, biology, environmental research, food hygiene and other animal health-linked skills.

The “classical” (natural) cooperation between physicians and veterinarians traces back to the remote past when no special differentiation was usually made between human and animal medical care. “One medicine” was the rule among Egyptians, Babylonians, Greeks and Romans. During the Middle Ages, human medicine was kept strongly separated from the animal one on religious grounds, but the concept of a unique medicine revived in the sixteenth and seventeenth centuries and has continued up to the present day. In establishing policies of intersectoral collaboration, great significance must be given to the “vertical” and “horizontal” approaches, the former being traditional to medical schools, tending to consider each item separately irrespective of the whole context. The latter is a global strategy considering the problem-solving process in its different aspects. Both approaches may be suitable in different situations and may be harmonized and applied together. The trend is now towards the choice of the horizontal approach as it apparently shows more practical advantages, especially in such new fields as the control of zoonoses and of the “quality” (not only “safety”) of food.

The development of VPH in international health institutions, especially in WHO along with FAO and OIE, may be divided into subsequent steps starting from the 1950s and 1960s. The first step (until the 1970s) defined the public health

role of zoonoses more precisely, diverted health care from the individual to the community, introduced large-scale zoonoses control programmes and surveillance on food of animal origin. Most countries, however, kept a clear distinction between human and animal health problems. The second step (until the 1980s) strengthened VPH and convened many interprofessional expert meetings on issues linked to both human and animal health such as farming intensification, animal food pollution and animal-associated problems in cities (veterinary urban hygiene). Some distinction was maintained between human and veterinary medicine, but with stronger interest in integrated VPH action. The third step, from the 1980s until the present is marked by the primary health care strategy: "Health for all by the year 2000", and by the first official recognition of the necessity for intersectoral collaboration and "horizontal", multioriented programmes. The new conception was applied to the education and training of all categories of health operators in view of joint strategies to cope with complex problems.

Nowadays, worldwide changes are in progress or expected affecting the environment (e.g. climatic modifications), human life (e.g. urbanization and demographic increase) and disease epidemiology (e.g. emergence and re-emergence of pathologies, zoonoses included). Global climatic changes (increased temperature) are most likely to favour vector-borne and other diseases in humans and animals, especially in developing countries. In the event of new infections (either animal or human), interprofessional collaboration is imperative, as recently proven by the cases of Rift Valley fever and SARS.

Trade globalization has favoured the spread of food-borne infections (e.g. BSE) and collaboration (international partnership) is needed on multidisciplinary grounds to monitor livestock feeding throughout the production cycle. The same is true for novel VPH commitments regarding laboratory research, new procedures (e.g. the Hazard Analysis and Critical Control Point System, health impact assessment), genetically modified organisms (GMOs), aquaculture and "veterinary disastrology".

Restraints to intersectoral cooperation (e.g. conflicting economic and/or political interests), are discussed along with the need for coordinated communication channels able to counteract the growing influence of mass media in determining the magnitude or priority of health issues.

Annexes to the paper discuss some of the issues in more detail: 1) Giorgio Battelli: Socio-economic impact of animal diseases and health action: some considerations, with special reference to developing countries; 2) Alfredo Caprioli: Comment on the role of the laboratory in VPH; 3) Ottorino Cosivi: WHO's efforts to assist member countries to prepare for the deliberate use of biological or chemical agents to cause harm; 4) Daniele De Meneghi: The importance of intersectoral collaboration for prevention and control of sylvatic tick-borne zoonoses: field experiences in ecological research on Lyme borreliosis in northwestern Italy; 5) Agostino Macrì: Animal farming and prophylactic and therapeutic practices: benefits and risks; 6) Paolo Pasquali: VPH problems of immunodepressed persons; 7) Giovanni Poglajen: Urban veterinary hygiene: a topic for a multidisciplinary

approach; 8) Aristarco Seimenis: Problems in multidisciplinary (intersectoral) collaboration: the public and animal health sectors' issue.

Training on veterinary public health issues at community level and public education – Kachani, Alioua and El Idrissi

This document examines issues of VPH community-based systems in relation to training and extension at community level. It describes the present situation, the desired situation and proposes possible ways to achieve the desired situation.

At present, in developing countries, poverty, lack of education, low levels of hygiene, socio-cultural and religious habits, close association with various animal species and unawareness of disease transmission factors help increase the socio-economic impact of zoonotic and food-borne diseases. VPH services are generally unsatisfactory. Training at community level and public education are poor and inadequate. The absence of control programmes is mainly due to the lack of leadership and commitment of the relevant institutions, the absence of a global vision and a clear strategy at the national level, and the lack of intersectoral collaboration and involvement of the community and resources.

In order to deliver more efficient VPH services, some prerequisites are necessary, at the political, technical and population levels. There is a need for a solid political decision that considers implementation of control programmes, provides the necessary funding, encourages research and provides the technical structures and infrastructures, with clear objectives and optimal conditions for the realization of the defined VPH activities within a suitable time frame.

To achieve these objectives, a social marketing methodology has been developed for the planning and implementation of programmes designed to bring about social change using concepts from commercial marketing. These ensure the financial and geographical accessibility of a service or a product to a target population. The planning phase includes a description of the current and desired situations and the ways to achieve the desired situation. The implementation phase includes a study of the site, the development of tools, strategies for the product, price, promotion and public relations and, finally, information, communication and education. The last phase includes monitoring, evaluation and feedback.

Training on VPH issues at community level and public education require optimal conditions and crucial prerequisites. There is a need for a political decision and commitment at a high level in order to consider the control of zoonoses as a priority. The relevant structures must define a clear control strategy within an appropriate legislation and must be committed to the programme. This control requires interdisciplinary teams and intersectoral collaboration. The involvement and support of the local population and the social structures will ensure the success and sustainability of control programmes. The social marketing approach for the organization of VPH community-based educational systems and services is therefore recommended.

CONCLUSIONS

It was recognized that there was an urgent need to develop, introduce and evaluate low-cost, innovative VPH programmes at community levels especially where human and livestock populations are underserved by conventional public health delivery systems. To identify better and prioritize VPH problems in these areas, improved risk-based surveillance programmes will be needed that involve community participation.

Given the current limitations of the public sector to provide VPH community services, it appears that contractual services with private veterinarians can provide these much-needed inputs. In remoter areas, the potential for community human and animal health workers to deliver simple extension VPH services, as well as collect information, should be evaluated. A social marketing approach for VPH educational systems and services was also proposed.

Finally, while it was agreed that VPH community-based systems are “public good” tasks, all stakeholders and health professionals should be involved in the delivery of these services.

RECOMMENDATIONS

The consultation recommended that FAO should:

1. take the lead at the international level in forming an interagency commission for support to and coordination of VPH community systems development. This commission would include WHO and other relevant organizations such as OIE, the United Nations Environment Programme, the United Nations Development Programme, the United Nations Childrens Fund, the World Bank and the Consultative Group on International Agricultural Research, and would meet on a regular basis;
2. facilitate national and regional interministerial meetings, especially between the agriculture and health sectors, for the coordination of intersectoral strategies to control and prevent zoonotic and food-borne diseases;
3. formalize a dedicated unit for VPH within the Animal Health Service, with the cooperation of other services. In addition, consideration should be given to enhancing VPH capabilities at FAO Regional and Subregional Offices (for example through the placement of VPH officers). The unit would assist in VPH systems development and service delivery, and coordinate VPH activities in member countries;
4. assist in establishing an international scientific advisory committee for VPH, which should include representatives from FAO/WHO Collaborating and Reference Centres, relevant research institutes, universities and non-governmental organizations, etc. and which would advise the interagency VPH commission and the VPH unit at FAO;
5. assist in the establishment of regional/subregional collaborating and reference centres for surveillance, diagnosis, research and training on VPH problems especially in developing countries;

6. assist member countries in the establishment and/or strengthening of an official decision-making body (statutory body) for VPH activities (involving all stakeholders at interministerial level) as well as in the development of policies and strategies, including establishment of legislation necessary for effective delivery of VPH services especially at community levels;
7. develop a database of all VPH activities within member countries. This would include the current status of VPH activities and specific persons involved with them at country level (including an organigram), involving all stakeholders (decision-makers, technical and resource personnel, research institutes, etc). This database would then provide the basis for FAO support to strengthening VPH delivery systems as well as facilitating two-way communication and networking;
8. provide support to countries for identifying and solving problems especially relating to endemic, persistent zoonoses and food-borne diseases with specific recommendations for prioritization of such VPH hazards based on risk analysis, burden assessment and socio-economic factors. Zoonoses and other VPH hazards should also be considered in the context of poverty alleviation. Support should include the development of practical guidelines for the delivery of VPH services at the community level to support new or existing human and animal health services;
9. include VPH control and prevention initiatives as a priority for developing countries to seek assistance through FAO's Technical Cooperation Programmes. Single zoonotic/food-borne disease risk analysis and burden assessment could be used as a catalyst for strengthening VPH structures and functions in general. Participatory epidemiological and economic techniques to assist in defining risk and disease burden assessments should also be supported;
10. support the formulation of multilingual/multimedia VPH materials for extension at the community level, continuing education for technical staff such as community human and animal health workers ("train the trainers") and tertiary education for health professionals, including veterinarians;
11. encourage the development of a range of extension, training and education programmes including distance (Internet) learning related to zoonoses and food-borne diseases. Integrated education of veterinary and medical students on zoonoses and food-borne diseases should be incorporated in their curricula;
12. support the formation of new or utilize existing regional networks for information exchange, standardization and integration of VPH research and control activities.