Evolving veterinary education for a safer world

An introduction to veterinary public health

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AN INTRODUCTION TO VETERINARY PUBLIC HEALTH.

Outline

1. Introduction
2. Concept of Veterinary Public Health.
5. Curriculum for Veterinary Public Health
6. Conclusions
1: Introduction

The relationship between animal health and human health has been recognised since ancient times.

18th century the medical authorities both in the UK and on continental Europe were instrumental in developing the disease control measures to combat rinderpest.
1: Introduction

Rudolph Virchow (1821–1902)

Between animal and human medicine there is no dividing line – nor should there be."

19th century and the early 20th century there was continued interest in linking human and veterinary medicine based on the discoveries that there were similar disease processes in both animals and humans.
1: Introduction

mid 20th century collaboration between human and veterinary medicine declined to such an extent that there was hardly any collaboration between the two professions. Reasons include the degree of specialisation which occurred in both professions and also the different objectives placed on human and veterinary medicine

“Veterinary Public Health comprises all the community efforts influencing and influenced by the veterinary medical arts and sciences applied to the prevention of diseases, protection of life, and promotion of the well being and efficiency of man.“ (1951 FAO).
1: Introduction

‘Veterinary Public Health is a component of public health activities devoted to the application of professional veterinary skills, knowledge and resources for the protection and improvement of human health”.

1975 The FAO/WHO joint technical report modified the earlier definition.
The term "one medicine" (forerunner of the more current term, One Health) was used by Dr. Schwabe in his 1984 book, *Veterinary Medicine and Human Health*, to bring a renewed interest to the synergy that can emerge when health practitioners and scientists collaborate. His insightful words, "The critical needs of man include the combating of diseases, ensuring enough food, adequate environmental quality, and a society in which humane values prevail," are even more compelling today.
14 October 2008
This has evolved into today’s “One Health” approach which seeks to promote partnership by developing increased cooperation and collaboration between professionals working in the human and veterinary fields.
1: Introduction

The new concept “One World, One Health” has recently appeared, indicating that the world has suddenly woken up to the link between animal diseases and public health. And about time to!

Bernard Vallat
Director General OIE
6th May 2009
2: Concept of Veterinary Public Health

What is Veterinary Public Health?
2: Concept of Veterinary Public Health

What is Health?

"Health is the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."  

WHO
2: Concept of Veterinary Public Health

Veterinary Public Health is “the contributions to the physical, mental and social well being of humans through an understanding and application of veterinary science".

The currently accepted definition of VPH endorsed by the WHO, FAO and OIE was the output of a 1999 WHO consultation on "Future trends in veterinary public health".
2: Concept of Veterinary Public Health

This definition is very comprehensive and refers to veterinary public health as a contribution not only to the physical well-being of human beings but goes even further. It recognises that the animal itself, animal health and veterinary science are related to the physical, mental and social well-being of humans and the contribution of veterinary public health in this field is considered fundamental.
2: Concept of Veterinary Public Health

This can lead to problems of determining what should be included within the remit of VPH. During the foot and mouth outbreaks in the UK during the 2001 and again in 2007 there was no evidence of transmission of the virus from animals to humans. The impact of these outbreaks and their control on the mental and social well-being of certain sectors of the population was considerable. Consequently it can be argued that VPH should incorporate the major non-zoonotic diseases.
3: Components of Veterinary Public Health.

What comprises Veterinary Public Health?
3: Components of Veterinary Public Health.

The 1999 WHO report considered veterinary science was a core discipline that performs essential public health functions.

The report also indicated that veterinary science emphasises preventive, economic and population aspects of animal health and production, as they relate to human health and well-being.

Taken at face value the currently accepted definition of VPH could imply that all veterinary activity could be considered to be part of VPH which makes it necessary to identify clearly the core areas for VPH.
3: Components of Veterinary Public Health.

For practical purposes the main components of VPH can be considered to comprise the following:

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- Epidemiology and population medicine
3: Components of Veterinary Public Health.

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- Basic sciences
- Epidemiology and population medicine
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- Food Hygiene, Science and Technology
3: Components of Veterinary Public Health.

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• Basic sciences
• Epidemiology and population medicine
• Risk analysis
• Food Hygiene, Science and Technology
• Clinical skills
4: Activities in Veterinary Public Health.

What does Veterinary Public Health involve?
4: Activities in Veterinary Public Health.

In order to contribute effectively to activities covered by VPH the veterinarian will need to draw on the expertise, knowledge and resources gained from the five components listed in the previous section.

Traditionally VPH activity was focussed primarily on zoonoses and food hygiene, which in spite of all the changes and new developments in the last decade remain the core activities.

With the advent of the “One Health” programmes and the all embracing FAO/OIE/WHO definition these activities have expanded although they may vary from country to country.
4: Activities in Veterinary Public Health.

For convenience VPH activities fall into a number of related categories many of which overlap.

1. Zoonoses prevention and control
2. Food safety and increasingly food security
3. Environment protection
4. Animals in society
5. Liaison
6. Other areas

Any disease and/or infection which is naturally "transmissible from vertebrate animals to man" is classified as a zoonosis (WHO)

~75% of human emerging infectious diseases are zoonotic

~60% of human infectious diseases are zoonotic

~60% of infectious diseases of most hosts have another host

33% of zoonoses are transmissible between humans
4: Activities in Veterinary Public Health.
Zoonoses prevention and control

**Endemic Zoonoses**
Salmonella, campylobacter, toxoplasmosis

**Emerging and re-emerging zoonoses**
Avian influenza, Bovine Spongiform Encephalitis (BSE), Nipah virus, SARS, A/H1N1.

**Neglected zoonoses**
Brucellosis, dog rabies, cysticercosis/taeniasis, echinococcosis/hydatidosis, tuberculosis, anthrax, trypanosomiasis, Leishmaniasis.

Source:

1. Coordinated international responses are therefore essential across veterinary and human health sectors, regions and countries to control and prevent emerging zoonoses.

2. New mechanisms of surveillance and response are required: using new approaches (e.g. syndromic surveillance), using new tools (e.g. geographic information systems, remote sensing data and molecular epidemiology) and bringing together different sectors and disciplines (e.g. medical, veterinary, population biology, information technology, economics, social science and diagnostics).

3. In most countries, there is inadequate support for building public health and veterinary core capacities in the zoonoses field, including a lack of basic training and education, database templates and standards, risk management and assessment, and communication skills.

- diagnosis,
- surveillance,
- early identification of new and emerging infections,
- risk analysis,
- epidemiology,
- prevention,
- control and elimination of the zoonotic agents.
- All aspects of occupational health.
4: Activities in Veterinary Public Health. Food Safety and Security

Food quantity (Food security)
Quality/Safety
Welfare of production
Some estimates suggest that world production of food animals is reduced by more than 20% due to disease, which means that even animal diseases not transmissible to humans may lead to serious public health problems due to the shortages and deficiencies that can follow.

Bernard Vallat
Director General OIE
6th May 2009
4: Activities in Veterinary Public Health.

Food Safety and Security

SAFETY AND QUALITY

Food and waterborne diarrhoeal diseases are leading causes of illness and death in less developed countries, killing approximately 2.2 Million people annually 1.9 million of whom are children.

On Farm
Disease control
Hygiene
Residues
Antibiotics use
Farm assurance
Farm health planning

Production
Meat hygiene
Milk hygiene
Fish hygiene

There is an overriding need to minimise the risk of biological, chemical and physical contamination entering the food chain.
Welfare in production
4: Activities in Veterinary Public Health.

Environment protection

Environment protection includes:
1. waste management,
2. disposal of animal by products,
3. impact of medicines
4. range of activities linked to vectors, water, wildlife and use of animal monitors.

Changes in land and water use, overgrazing, encroachment of farming and human activities onto wildlife habitat, sewage, pollutants, and introduced toxins contribute to the threats and degradation of environmental resources that sustain life.
4: Activities in Veterinary Public Health. Animals in society
4: Activities in Veterinary Public Health.
Animals in society

Source: http://www.norphil.co.uk/catalog/images/080205-working-dogs.jpg
4: Activities in Veterinary Public Health.
Animals in society

4: Activities in Veterinary Public Health.
Liaison

Some examples..

VTEC O157 on open farms
4: Activities in Veterinary Public Health.

Liaison

John Gummer & CMO (1990) – “Beef is safe”
4: Activities in Veterinary Public Health.

Liaison

Liaison between all those professionals involved in protecting human health is critical to success. In order to:-

• Identify new problems
• develop joint policies to protect humans,
• successfully solve problems,
• identify and conduct research,
• implement control programmes in animals and humans
• foster good communication

all depend on good liaison between the medical and veterinary professions
4: Activities in Veterinary Public Health. Other areas

Other areas where liaison is important include those specific activities which cross professional boundaries. The list below is not comprehensive but gives an indication of some areas where VPH expertise can be involved:

- Biologics development and production
- Biomedical research
- Emergency actions including natural and man-made disasters
- Health education and extension
- Management of public health emergencies
- Production and control of biological products and medical devices.
Liaison

Veterinary public health is an essential part of public health and includes various types of cooperation between the disciplines that link the health triad, people-animals-environment, and all of its interactions.
5: Curriculum for Veterinary Public Health

How do we ensure the veterinary profession can meet its obligation to Veterinary Public Health?
5: Curriculum for Veterinary Public Health

Issues

1. The wide scope of the FAO/OIE/WHO definition can create some difficulties in determining the precise role and educational needs of VPH from a practical perspective.
2. There is debate in many countries concerning the structure of the core undergraduate curriculum and the time and resources available to teach the different subjects.

3. Whilst all veterinary faculties teach VPH in one form or other the training varies considerably between countries and sometimes even between veterinary schools in the same country.

4. Often VPH is not seen as a clearly identifiable subject especially when it is incorporated into other subjects such as basic science or clinical studies where it may have no obvious separate identity.
5: Curriculum for Veterinary Public Health

Issues

5. Different part of the world have different needs when dealing with human health. Whilst it may also be feasible to develop a standardised curriculum for VPH education at both the undergraduate and postgraduate level it may not be appropriate to apply this rigidly in different countries.

6. What should be included at undergraduate level and what should be left to post graduate training.
5: Curriculum for Veterinary Public Health

Solutions

1. A clear understanding of the scope of VPH is important if a curriculum is to be developed to ensure that new veterinary graduates have a detailed understanding of the subject.

2. The curriculum should encourage integration of VPH concepts and demonstrate the important role that veterinarians have to play in relation to human health throughout the entire veterinary teaching program from the first year until graduation.
5: Curriculum for Veterinary Public Health

Solutions

3. The new graduate must have the basic skills for use in the vocational situation. It is equally important to differentiate the topics to be included in the undergraduate curriculum and those which should be dealt with in postgraduate courses or as part of the life long learning. Need to be clear about the first day competences for the new graduate.

4. In international trade the terms equivalence is used to indicate outcomes which may be achieved in different ways. The same terminology needs to be used for veterinary education. It is the outcomes in veterinary public health which are important. Training for the new graduate and for the professionals working in the field should be delivered in such a way as to support these outcomes.
5. In order to integrate VPH into the goals of public health as proposed by the One Heath concept it is essential to improve the relationships between human medicine and veterinary science with the potential for joint training where appropriate.

6. Need to develop practical problem based learning so that not only do veterinarians have the knowledge and skills but they also have the practical experience.
6: Conclusions

To be successful:-
Veterinarians active in this field must have the necessary knowledge and skills to address the issues and demonstrate that they have these skills.

They must have an awareness of the contributions which can be made by the other professions.

The veterinary profession must be proactive
6: Conclusions

The aim should be to produce graduates who are aware of and enthusiastic about the important role veterinarians have in public health in its broadest sense. Upon graduation the veterinarian must have the basic foundation to build on and must be equipped with the theoretical and practical knowledge, understanding and skills to pursue a structured progression from undergraduate level through the appropriate postgraduate training necessary to enable them to fulfil their roles and responsibilities and to face the opportunities and challenges of the 21st century.
Thank you for your attention ........