THE PAST, THE PRESENT AND THE FUTURE OF MULTIDISCIPLINARY COLLABORATION IN VETERINARY PUBLIC HEALTH AND EXPECTED PERSPECTIVES

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The approach to cooperation between physicians and veterinarians and with any other health-related skills shall be addressed to the identification and attainment of the goals that require collaboration meant both as a joint action and a division of responsibility. Collaboration must be achieved both when Medical and Veterinary Services belong to the same Administration and when they belong to different ones. In most countries of the Mediterranean area and in the rest of the world, Veterinary Services depend on the agricultural administration, and this constitutes the most common model. In some other countries Veterinary Services are split and pertain to both agricultural and health administration. In Austria, Italy and few other nations Veterinary Services belong to the health administration. The fields of action of VPH (hence of Veterinary Services) in this model involve all aspects of public veterinary activity including such issues as animal diseases and zoonoses control, food hygiene, animal-linked environmental problems. Accordingly, the sectors and disciplines covered by Veterinary Services will include infectiology, toxicology, food science, environmental and biological pollutants, and others. This model implies per se a high degree of multidisciplinary collaboration and will be prevailingly used in this paper.

The academic teaching tradition in our Schools, both medical and veterinary, tends to a “vertical” approach, according to which each item is considered per se and is usually studied irrespective of the whole context and of its practical (and practicable) application. VPH and Veterinary Services, instead, are confronted with problems which require a “horizontal” approach, i.e. a strategy that takes into consideration all the aspects involved in the problem-solving process, including legal, administrative, epidemiological, aetiological, economic, public health, social factors and many others. No problem associated with public health (e.g. zoonoses control, food hygiene, veterinary urban hygiene, action in emergencies, etc.) can be faced without a horizontal approach. All too often an obvious discrepancy is seen between the available models of strategy and the actual necessities. The vertical trend may be visualised as a forest of independent trees, whereas the practical needs of public health command a horizontal policy comparable to a mycelial network of interconnected hyphae. Of course, close links are essential between the two approaches enabling a co-ordination of the basic vertical inputs with the following horizontal ones.

A recent survey on the control of cystic echinococcosis [3] offers a good practical example of how vertical and horizontal approaches may be selected and applied in facing actual issues. The study has shown that this infection which is “classically” fought by the vertical method (with comparatively successful outcomes, e.g. in Iceland and New Zealand) appears to be better controlled by adopting the horizontal method that considers the disease as a “complex” in which individual components are significant per se, so that actions based on such single components may be devised and applied with chances of success.

The past
As previously stated, the concept itself of VPH as expressed by its new definition implies and highlights the need for joint action of both medical and veterinary sciences (and allied ones). There is no reasonable doubt that both disciplines (or, better still, practices) were born together and share common roots. To our knowledge, no special differentiation was made in the past between healers of humans and healers of animals. Both mythology and history provide various examples of “one medicine” in different parts of the ancient world.

The legendary figure of the centaur Chiron may be taken as the symbol of a unique medicine because, besides his physically being half-man and half-animal, he is depicted as a master practicing and teaching veterinary and human medicines at the same time. He is reported to have lived during the period from 1250 to 1220 B.C. and to have left a number of disciples. The most famous of these, Asclepius, is considered one of the “fathers of medicine”, and both humans and animals received medical care in his temples.

The ancient Egyptians are known to practice one (or general) medicine. Among the many examples provided by Schwabe [4], we read that “the Egyptian priesthood was hereditary… The priests and priestesses… also (i.e. besides humans - Authors’ note) cared for the individual animal or animals maintained in the temples”.

A document of the 3rd millennium B.C. found in Egypt in 1895 contains a treatise on diseases of women and a dissertation on the treatment of animal diseases. Another papyrus of the 2nd millennium B.C. reports a list of remedies used in veterinary medicine. The same principles were followed by the two medical branches and identical remedies were often recommended for the treatment of similar ailments both in humans and animals.

The famous Babylonian Hammurabi’s law code was found in 1901 among the ruins of Susa and deciphered in 1902. The inscriptions date back to the 2nd millennium B.C. and, among other items, probably contain the first “institutional” regulations of veterinary activity along with topics of human medicine and principles of food hygiene.

Hippocrates (460 B.C.), the “father of human medicine”, underlines the usefulness of comparative pathology and its application to human medicine. He was also the first to refer to an occupational zoonosis when he mentioned that the Libyan shepherds in continuous contact with goats were the healthiest of men without any symptoms of epilepsy. Galen, another “father of medicine”, maintained that veterinary observations and practices are useful to human medicine.

At the height of the Roman Empire, in highly cultured and rational times, Cicero [5] (1st century B.C.) reports that the birth of human medicine was believed to have first derived from the observation of diseases of animals and of the natural remedies they instinctively sought and applied.

The merging of healing practices into a unique, comprehensive medical science was also due to the recognition of diseases shared by animals and man (zoonoses) and of “plagues” which affected humans and animals contemporaneously. A typical example of the common interest of health scholars in veterinary and human medicine is rabies, “the mother of all zoonoses”, a disease known to and feared by man from time immemorial and for which the concept was developed of “transmission” (from dog to dog and, later, from dog to man).

The “natural”, both practical and theoretical viewing of “one medicine” (including comparative studies of anatomy and pathology) was strongly discouraged after the coming of the Christian era and the strengthening of the religious fanaticism (that now would be termed as “fundamentalism”) throughout the Middle Ages. During such a period the prevailing concern was to
stress the different nature of man modelled in the likeness of God rather than recognise (admit) that man and animals were so similar as to share the same diseases. This attitude continued until the transition period from the “darkness” of the Middle Ages to the revival of rationalism during the Enlightenment and Renaissance (XVI-XVII centuries). In those times, outstanding scientists and physicians in Europe were treating medical and veterinary issues and were committed to the solving of animal health problems, especially epidemics in livestock. In this same period evolutionistic theories were developed and novel attention was again paid to comparative pathology. Great physicians such as G. Fracastorus (1478?–1553), M. Malpighi (1628–1694) and F. Redi (1626–1698) had studied animal diseases and parasites, and the concept of a unique medicine was again prevailing. B. Ramazzini (1623–1714), Professor at the University of Padua, wrote a dissertation on a cattle plague outbreak in Venice and Padua and may be considered the “resuscitator” of comparative veterinary and human pathology as well as the founder (or inventor) of occupational medicine. The archiatre F.M. Lancisi (1654–1720) was charged by the Pope with the control of a cattle plague in the State of Church and enforced a number of measures, the most important of which is “stamping out”, still used in fighting most serious infectious animal diseases.

A prestigious Medical School had been instituted in that period which, according to the prevailing current viewpoints on health matters, was dealing with both human and animal epidemics. A relevant example of interdisciplinary commitment is given by the work of L.A. Muratori (1672–1750), librarian and political adviser of the Duke of Modena, who published a large amount of contributions to public health based on his experience in the control of both human and animal plagues, with numerous recommendations and comments on the political, social and economic aspects of the issue.

Due mention must also be made of E. Jenner (1749–1823) who posed the bases of human vaccination against smallpox (and introduced the term “vaccine”).

In the period from Renaissance to the foundation of Veterinary Schools in France, a significant number of doctors were practicing both for humans and animals. Especially in England, some doctors left human medicine and passed to the more economically appealing veterinary care of horses and dogs.

While in previous times a unique school was available of general medical science, the first veterinary schools were being founded in France in the XVIII century. Yet, the concept of one medicine and the close links and similarities between veterinary and human medicine continued to be stressed by a number of authors. As an example, A. Zanon (1696–1770), in his first Italian History of Veterinary Medicine, wrote that veterinary medicine shares the same dignity with human medicine “… since veterinary doctrine does not differ in many respects from the Medical Art, but these two Arts coincide in several cases…” The same concept is expressed until the past century (e.g. by R. Virchow -1821–1902- who first used the term “zoonosis”, and by L. Busasco and F. Boschetti -1902- who wrote a treatise on comparative medicine, a section of which is specifically intended for both physicians and veterinarians). In more recent times, due mention must be made of Gaston Ramon (1886–1963), a veterinarian and biologist, director of the Institute Pasteur in 1940, who devoted himself to human medicine, especially to the development of human vaccination techniques (e.g. associated vaccinations, formulation of vaccines against diphtheria, tetanus and poliomyelitis).

The present

Collaboration between physicians and veterinarians and the joint practice of the two medical branches continued their tradition since the beginning of “one” medicine. As considered in the
previous paragraph, this trend went on as such up to 2-3 centuries ago when more differentiated
skills and technologies were required. Nonetheless, while the “two medicines” evolved along their
separate ways, there were still some examples of unity to testify the need for common action. For
instance, many city health boards and/or committees for the control of zoonoses (mainly rabies) and
food hygiene continued to be formed by both physicians and veterinarians (and often included allied
health personnel). Under certain circumstances (e. g. at village level), where veterinary and medical
doctors were scarce, physicians were sometimes asked to take care of animals and veterinarians to
assist humans (as an early example of primary health care).

It must be also remembered that an important role in fostering interdisciplinary cooperation
was and is still being played by institutions investigating on biological sciences (parasitology,
 microbiology, mycology, virology, infectivology, toxicology, physiology, anatomy, etc.) in which
the borderline between the two medicines was never fully recognised but the need was increasingly
felt for a more integrated approach to research as a whole. This has become even truer when such
new and emerging items appeared as laboratory animal medicine, analytical epidemiology, animal
models for particular human diseases. Similarly, in environmental sciences and in pollution control,
as well as in disease surveillance systems (mainly zoonoses), animals and animal models proved
once more to be indispensable substitute for humans (e. g as indicators of human health risks). It
may be interesting to note that the steadily expanding action of VPH within Public Health activities
has actually helped revive "one medicine", with the exception of the few decades before World War
II when the two professions were generally kept distinct due to the increasing trend to specialisation
in research and practice.

The development of VPH has always played a relevant role within the activities of national
and international health bodies and especially the WHO. The advancement of VPH may be
described as subsequent steps starting from the 1950s and 1960s, when the importance of zoonoses
in public health was being defined more and more precisely, although most countries still kept a
clear distinction between human health problems and veterinary issues. The provision of health care
was gradually diverted from individual patients to the community, large-scale planning techniques
were devised and evaluation techniques were introduced. During such a period programmes were
formulated to control individual zoonoses and exert surveillance over foods of animal origin.

A second step in the 1970s was devoted to strengthening the foundations of VPH. A great
number of expert meetings were convened during this period and many issues were examined
concerning both animal and human health problems such as farming intensification, noxious
residues in foods of animal origin, problems associated with the presence of animals in cities
(veterinary urban hygiene). A distinction was still maintained between problems of human and
animal health, but again the need was strongly felt for integrated programmes to control zoonoses
and animal diseases. Strong emphasis was placed on the need to develop systems of monitoring and
evaluation of environment-related health risks by using animals and animal models. The necessity
was also recognised of interdisciplinary professional training in VPH.

The third step in the 1980s (until present days) was marked by the WHO General Assembly
in Alma Ata in 1978, where the foundations were laid of Primary Health Care launching the
strategy "Health for all by the year 2000". Here the need was first officially and universally
recognised for intersectoral collaboration and for the development of "horizontal" programmes
covering a multiplicity of health problems seen in the light of their interconnections and
relationships. Health education was instituted involving different skills in health-related professions.
Training and refresher courses were extended to all categories of health operators, mainly
physicians and veterinarians, to enable coordinated strategies and policies to be adopted to manage
and solve multifaceted public health problems.
A prevailing aspect (trend) of the health policy of this period is the involvement of the whole social body in health and economy. Indeed, social and economic indexes were established to evaluate the “quality of life” and social welfare associated with the development and advancement of health services (including Veterinary Services). From the international to the local level, the organisation of intersectoral links and functions in the operational structure of VPH activities proved to require fundamental steps which include the following:

- agreement on political and legal means for establishing intersectoral coordination
- identification of common problems
- programme planning and definition of responsibilities
- identification of those areas requiring interdisciplinary collaboration
- planning of joint programmes
- establishment of communication channels in the administrative structure of the concerned institutions
- establishment of information systems, especially on diseases concerning both animal and human health
- establishment of mechanisms of operational coordination and evaluation of results at the different levels.

During the last twenty years, primary health care had been the main mover towards “health for all” strategy. Despite some improvements, however, advancements have been hampered by a number of adverse factors, including poor political interest in adopting the necessary measures and establishing intersectoral action for health.

The present task of VPH within the overall framework of public health is still to promote activities enabling the achievement of health for all and assist in reaching its objectives. There have been substantial changes over the last years involving health directly (new and emerging animal diseases and zoonoses; viral haemorrhagic fevers; unforeseen infections such as AIDS, BSE, perhaps SARS, and others).

The future

Other changes are expected during the next two-three decades which are likely to heavily affect VPH activities. The major predictable ones will include the following:

- Doubling of world human population within 20 years
- Growing urbanisation of developing countries
- Increasing environmental problems due to pollution
- Increase in the global temperature of the planet
- Appearance of new and re-emerging zoonoses with changed or changing epidemiologic features
- Global trends in the organisation of national health services, with contextual recognition of the many functions of veterinary services in improving public health and well-being.

Of these modifications, worldwide climatic changes are expected to increase the risk of vector-borne and other diseases in humans and animals. Much of the impact of changed climate will affect developing countries with poor monitoring capabilities, so that close collaboration will be needed between developed and developing countries to work out cost-effective methods to relieve the effect of climatic changes.
Also globalisation of trade has favoured the diffusion of food-borne infections and diseases such as BSE in cattle. As a consequence, close collaboration is needed to monitor livestock feed during production, handling, processing and marketing. Under such circumstances, any transmissible (in the broadest sense) disease represents a global problem so that no country is isolated or protected enough to guarantee the safety of its human and animal populations. This commands an international partnership able to grant international food safety programmes based upon multidisciplinary grounds and integrated with strategies for public health and sanitary control.

All the activities of VPH need to be supported by intersectoral action. It is difficult to estimate the quantity of collaboration which is required (or which should be recommended) from the different disciplines having some role in common with VPH, and the amount of this collaboration changes widely in different situations.

The main issues (disciplines) which should give some support to VPH; in alphabetical order: agriculture/animal husbandry, animal welfare, economy, environment science, food science, legislation, medicine and public health, urban management, wildlife management.

In our "logo" we affirm that VPH is an indicator of the state of peace and wellbeing of a nation. As a matter of fact, the state of relative peace which followed World War II coincided with a period of maximum development of VPH in many countries. The instability associated with the present prevailing political and commercial conflicts seems to coincide with a general decline of VPH, which is now in the middle of many social, political and commercial discords, and finds it hard to find its way. Many public health problems of maximum social and economic impact and most important for the poorest part of the world (e.g. malaria and cystic echinococcosis) are considered with diminished attention, while public health problems interesting commercially important minorities (e.g. BSE and SARS) receive maximum attention.

It seems as if public veterinary services had a prevailing tendency to move from patterns centred mainly on public health to patterns centred mainly on commercial interests.

The distances between the wealthy (the dominating) and the poor (the dominated), both meant as nations and as population classes, is on the increase. The public veterinary services often follow the tendency to facilitate the commercial interests linked to the dominating class rather than defend the unhealthy.

Mass media are growing in importance, and strongly influence all the activities of public veterinary services. In some instance minor problems have been transformed into main issues, or major problems have been ignored. As a matter of fact, in most instances the importance of an issue is determined by the importance it is given by mass media. The mass movements of persons, animals and food, feed and other products for occupation, tourism, commerce, military reasons and others are creating situations of uniformity which had never been experienced in the past (at least to such an extent), even in an area, such as the Mediterranean, which during centuries had experienced huge movements and commerce.

Mass movements of populations for religious events (pilgrimages, Councils, etc.), sports (Olympics, etc.) and other events pose problems for VPH regarding food protection, general hygiene, animal movements, etc.

Mass migrations and tourism are also posing problems to VPH associated with ritual slaughtering, food habits, social customs and other factors.
Someone had been expecting that the control of urban rabies, which has been eliminated from some Mediterranean countries some years ago, would have terminated the activities of control of animal populations. As a matter of fact, the management (control) of animal (mainly urban) populations has been transferred from "rabies control" to "animal welfare". The animal species which in the Mediterranean call for some responsibility of VPH services include farm animals and domestic, synanthropic and wild dogs (and other canines), cats, pigeons, starlings, etc. Veterinary services are responsible for population control (including sterilisation), welfare and other activities, often performed in collaboration with animal protection associations.

Veterinary urban hygiene is becoming one of the most significant (and visible) activities of veterinary services.

**International Organizations Collaboration as Development Factor**

Important advice on the co-operation among international organizations have been produced by the "MZCP ad hoc Interregional Co-ordination Meeting (Athens, 11 July 2003) and will be largely utilised in the following pages.

The present expansion and complexity of economic and public health problems among countries, especially linked to zoonotic and food-borne diseases, are leading the health-concerned sectors towards the coordination of their planning and implementing activities in different areas of the world. In this connection, the situation found in the Mediterranean and Middle Eastern regions has long since solicited the interests of major international organisations. These would include WHO, FAO, OIE and other relevant agencies such as UNEP, UNDP, UNICEF, World Bank, CGIAR, and others. These organisations should assist in establishing an international coordinating and advisory system acting jointly with the FAO/WHO Collaborating and Reference Centres. Such Centres are committed to the strengthening of the technical and scientific capabilities of agencies, institutions and personnel of health sectors and contextually point out the need for intersectoral collaboration among and within concerned countries. Regarding these activities, the Mediterranean Zoonoses Control Programme (MZCP) is playing an outstandingly important role through the MZCC of Athens by implementing the WHO policy in close collaboration with Member States and with specialised Collaborating Centres such as the WHO/FAO Collaborating Centre for VPH of Rome, the WHO/FAO Collaborating Centre on Research and Training in Veterinary Epidemiology and Management of Teramo, the CEMEC (European Centre for Disaster Medicine) of the Republic of San Marino, and the WHO Regional Office of Western Mediterranean of Alexandria (Egypt).

Very recently, the MZCC has convened a special meeting with the participation of representatives from WHO/HQs, Geneva, WHO/EMRO, Cairo, Egypt, FAO, OIE headquarters and its Regional Representatives for the Middle East, Beirut. The meeting was aimed at discussing and agreeing upon a strategy on planning and implementation of joint activities concerning the Mediterranean and Middle East Regions.

In many countries of this area, disease prevention and control activities are managed through vertical programmes using dedicated staff to provide specific services. Since many such programmes are donor-dependant, constraints are often encountered during their implementation since a number of donors may be reluctant to support a change towards integration as this policy might prolong their commitment and lead to loose their effectiveness and accountability. In response, the WHO and Member States have agreed on developing more integrated health strategies to design institutional mechanisms and administrative structures better able to promote intersectoral action for health. Within an “integrated” policy of control and prevention of communicable (and zoonotic) diseases according to the updated VPH concept, this also means a diversion from the vertical approach to the horizontal one. It includes common planning and implementation of
programmes and activities through a joint exploitation of resources, services and intervention at
different levels both inside and among involved sectors.

Intersectoral collaboration should become the strategy of any country needing to be first
relieved and later released from the socio-economic impact of zoonotic and food-borne diseases. International organisations are required to contribute and advise with their experience and understanding of the problem.

According to the MZCC, the present and foreseen VPH commitments and objectives in the Mediterranean and Middle East areas for a successful strategy based on interdisciplinary grounds may be summarised as follows:

1. Promote active involvement in the implementation of zoonoses prevention and control activities through targeted public information materials, health education and community partnership
2. Update VPH and health profession educational curricula according current knowledge and practical needs for the control of zoonoses with emphasis on multisectoral approaches
3. Promote and support multidisciplinary research on new approaches to control zoonotic and food-borne diseases, and health system research to foster intersectoral collaboration and co-ordination
4. Co-operate in the prevention of zoonotic and food-borne diseases, and in the exchange of information about any rejection by a State of food shipment of confirmed infectivity.

To complement the above actions, the following recommendations should be included:

a) Strengthen WHO’s partnership with regional and international organisations such as FAO and OIE in order to enhance control activities
b) Build an evidence based on the economic burden of zoonoses including cost-benefit and cost-effectiveness analyses of zoonoses control interventions
c) Promote the development of regional self-sufficiency in vaccines for zoonotic infections.