

Multidisciplinary collaboration in veterinary public health

Luca Busani^(a), Alfredo Caprioli^(a), Agostino Macrì^(a,b),
Adriano Mantovani^(c), Gaia Scavia^(a) and Aristarco Seimenis^(c)

^(a)Dipartimento di Sanità Alimentare ed Animale, Istituto Superiore di Sanità, Rome, Italy

^(b)WHO/FAO Collaborating Centre for Veterinary Public Health,

Dipartimento di Sanità Alimentare e Animale, Istituto Superiore di Sanità, Rome, Italy

^(c)WHO Mediterranean Zoonoses Control Centre, Athens, Greece

Summary. Multidisciplinary collaboration has been recognised necessary for centuries and has a long tradition. It is supported by solid bases, and is required to control a number of risk factors. Its practice encounters difficulties in various critical points. At present, the models of collaboration provided by the activities of the WHO/Mediterranean Zoonoses Control Centre and by the Med-Vet-Net network of the European Community represent relevant examples.

Key words: inter-professional collaboration, zoonoses, food safety, Europe, Mediterranean.

Riassunto (*La collaborazione multidisciplinare in sanità pubblica veterinaria*). La collaborazione multidisciplinare è riconosciuta necessaria da secoli ed ha una lunga tradizione. Ha solide fondamenta e si rivela indispensabile per il controllo di molti fattori di rischio. La sua attuazione pratica incontra difficoltà in molti punti critici. Significativi esempi di modelli di collaborazione multidisciplinare sono attualmente offerti dalle attività del Centro Mediterraneo per il Controllo delle Zoonosi e dalla rete Med-Vet-Net della Comunità Europea.

Parole chiave: collaborazione interprofessionale, zoonosi, sicurezza alimentare, Europa, Mediterraneo.

INTRODUCTION

Human medicine and animal medicine have developed as “one medicine” starting from the times in which their bases were laid until the mid 18th century when specialisation proved necessary and led to the establishment of modern veterinary schools. Mention must be made of outstanding physicians (Hippocrates, Redi, Galen, Fracastorius, Lancisi, Ramazzini) who faced human and animal epidemics. The founders of microbiology (Pasteur, Koch, and so on) investigated the aetiological agents of both human and animal diseases. Also in the earliest texts on communicable diseases the two fields are not dealt with separately.

The separation has been the logical consequence of the construction of different fields of action, made necessary by the evolution of the disciplines and of the social and economic context, but common areas have remained relevant and are required by modern developments. In veterinary medicine two separate branches have developed: the first (prevailing public) dealing with communicable diseases (zoonoses included), food safety, management of animal populations, animal welfare and environmental problems connected with animals; the second (prevailing private, devoted to the tradition of “one medicine”) practicing the care of animals (farm, companion, sports), and continuing the tradition of farriery.

The necessity of collaboration has been surveyed by many publications, courses, conferences etc. A fundamental document is the declaration of Alma Ata [1] stating that “primary health care involves, in addition to the health sector, all related sectors and aspects of national and community development, in particular agriculture, animal husbandry, food industry and other sectors”. The need for collaboration was also examined and recommended in two recent meetings of WHO [2] and FAO [3].

This paper will discuss some problems nowadays facing the practice of collaboration as well as special issues concerning the Mediterranean area and Europe.

THE PRACTICE OF MULTIDISCIPLINARY COLLABORATION

The risk factors requiring inter-professional collaboration are:

- zoonoses (all);
- human diseases connected with food of animal origin;
- animal population control;
- animal-connected occupational diseases;
- arthropods common to man and animals (disease vectors included);
- pests and vector vertebrates;
- detection of drug-resistant agents;

- environmental pathogenic agents;
- substances used to protect animal health;
- substances used to increase animal production;
- products able to induce resistance in pathogenic agents;
- environmental contamination;
- emergencies involving humans and animals;
- use of animals for human welfare and therapy;
- co-existence of animals with persons exposed to special risk.

The bases for inter-professional collaboration are:

- physicians should know the zoonoses reported in animals in the area (e.g. brucellosis, anthrax, rabies, emerging zoonoses);
- veterinarians should know which zoonoses are reported in humans in the region;
- the same applies for other animal-connected problems;
- legislation should provide for compulsory information on common problems;
- cases of zoonoses and other animal-connected problems in humans should be reported to veterinary services that will perform epidemiological investigation and take the necessary measures;
- cases of zoonoses and other related problems should be reported to medical services to identify persons at risk and take appropriate measures;
- planning of common action (e.g. in epidemics or emergencies) should be organised;
- common information and training should be organised;
- health education and public information should be worked out jointly.

The main critical points [4] are:

- competitiveness between sectors, services, professions, persons, etc.;
- different administrative locations;
- conflicting competences;
- professional weakness;
- different availability of personnel and resources;
- different access to the attention of public administrators and mass media;
- different cultural backgrounds;
- different evaluation of priorities;
- different languages;
- difficulties in recognising common objectives;
- lack of knowledge of legislation;
- lack of knowledge of productive structures (food production, processing chain included);
- lack of knowledge of the real needs of consumers;
- lack of knowledge of other service(s).

While it is generally recognised that most of the emerging and re-emerging infections are of zoonotic origin, on the other hand there is insufficient consideration for endemic classical zoonoses. While “new zoonoses” such as BSE, West Nile fever and others are attracting great attention and resources, “old zoonoses” are often overlooked and considered of scarce interest. Zoonotic leishmaniasis re-emerging in the Northern Mediterranean is considered a priority in areas where Brucellosis and cystic hydatidosis are old endemic infections implying more important consequences for human and animals. The most frequent

result is that services, professions and mass media pay attention to “fashionable” infections, while the control of classical endemics (brucellosis, bovine tuberculosis, rabies and others) is neglected although being of greater social importance.

A serious emerging problem (and an instructive model) is the epidemic of avian influenza which requires the collaboration of public and private physicians and veterinarians, as well as of wildlife specialists. These should co-operate also with administrators (politicians) and economists to face the social and financial issues involved in the control of the infection.

All too often there are scarce knowledge of and consideration for the welfare of animals and their role in human wellbeing. For example, the co-existence of animals with immunodepressed persons or of cats with pregnant women is not always accepted: a consultation with a well informed veterinarian could solve the problem.

Food safety is a field of “passive cooperation”. The fact that food of animal origin is safe because it has undergone veterinary inspection is often ignored. Food-associated infection outbreaks cause sometimes inter-professional conflicts and public alarm.

Often the inter-service report of zoonoses (brucellosis, anthrax, taeniasis/cysticercosis, cystic echinococcosis) in humans or animals is omitted even if required by law. The same applies to the detection of contaminants (estrogens, antibiotics, dioxins) in food of animal origin. These omissions result in increased difficulties in identifying possible consequences in humans.

A modern emerging concept is that “public health operators” are all the workers involved in the control of zoonoses, food safety, management of animal populations and related fields. Collaboration with medical and veterinary practitioners is also important. Another relevant prerequisite is the contribution by professionals not directly operating in public health, such as administrators, city planners, educators, etc.

VETERINARY AND MEDICAL INTEGRATED APPROACH TO FOODBORNE ZOOSES SURVEILLANCE IN THE EUROPEAN UNION

It is self-evident that integrated surveillance will require a strong multidisciplinary approach. Medical, veterinary, and food microbiologists should be involved as well as medical and veterinary epidemiologists.

The EU has recently reconsidered its strategy for the control of foodborne zoonoses, both in human and veterinary health sectors.

Rules on surveillance of zoonotic infections, through community surveillance networks, are included in the legislation on human communicable infectious diseases (Decision 2119/98/EC). A relevant contribution to the harmonisation between human and veterinary public health legislation arose from Directive 2003/99/EC which recently implemented the legislation on the surveillance and control of foodborne zoonoses. This Directive requires that EU Member States collect rele-

vant and comparable data in order to identify and characterise hazards, to assess exposures and to identify risks related to zoonoses and zoonotic agents with a “farm-to-fork” approach. All the data have to be communicated to the European Food Safety Agency (EFSA) and the European Centre for Disease Prevention and Control (ECDC).

Even if surveillance over some zoonoses (brucellosis, campylobacteriosis, cystic echinococcosis, listeriosis, salmonellosis, trichinellosis, tuberculosis, Shiga-toxin-producing *Escherichia coli* infections) is mandatory, interventions on any zoonotic agents along the entire food-chain must take into consideration the situation in humans in terms of occurrence, gravity and trends as well as in animals, foods and feeds.

Investigation on foodborne infection outbreaks is an example of the integrated approach to zoonoses and is provided for by the directive with particular emphasis. Co-operation between human and veterinary authorities aims at providing epidemiological and microbiological data for the identification of potential causes, sources and routes of infection. Exchange of information among medical, veterinary and food reference laboratories, both at the national and the EU level is also required. A crucial point is the comparability and harmonisation of the laboratory methods and data collection. Surveillance should include isolates of the specified agents from human cases, foodstuffs, potential animal reservoirs and feeds.

It is clear that zoonotic diseases of public health significance must be defined considering their impact on human and, therefore, managed by the medical sector, but such diseases need to be controlled from the veterinarians, frequently at the farm level. In a few countries like Denmark, Sweden and the UK, there is a close co-operation between public health and veterinary central institutes although in most European countries co-operation between these services is poor. The inclusion of the territorial veterinary services into the public health system could make this integration easier. Italy, for example, has greatly facilitated the harmonisation of the activities for surveillance of foodborne zoonoses like *Salmonella* or Shiga-toxin-producing *E. coli*. Joint reports on salmonella, in which the characteristics (serotypes, phagetypes, antibiotic resistance profiles, molecular typing etc.) of isolates from human infections with those from animals, food and the environment are compared contributing to the understanding of the epidemiology and transmission of such infections to humans.

Finally, inter-professional collaboration in zoonoses research, from medical and veterinary perspective, is promoted by the EU with the Med-Vet-Net network of excellence (<http://www.medvetnet.org/cns/templates/doc.php?id=5>). This network is funded by the EU 6th Framework Programme, within the “Quality and Safety of Food” Priority Area, Med-Vet-Net and comprises 16 partners (national veterinary laboratories, central medical reference or public health laboratories for infectious diseases) from among 10 Countries. The involved institutions have responsibilities for research and provision of advice and consultancy to their respective national

governments on aspects of microbiological food safety, human health risks, animal diseases and welfare.

The multidisciplinary area of expertise (human health, veterinary public health, epidemiology, risk analysis, statistics, microbiology, food science, molecular genetic and immunology) creates a broad critical mass of knowledge and experience enabling the vertical integration of expertise throughout the “whole food chain” and the development of cost-effective control strategies, which will have an impact on zoonotic diseases incidence and, consequently, on their social and economic costs.

THE EXPERIENCE IN THE MME REGIONS

It is rather evident that basic principles for the effective prevention, surveillance and control of zoonoses, foodborne diseases, occupational health and public health education programmes must include, as essential components, intersectoral collaboration and co-ordination. In this context, two brucellosis epidemiological surveillance projects have been implemented by the WHO/Mediterranean Zoonoses Control Centre in Syria and Jordan during 2003-2005.

In most of the MME countries, the above-mentioned essential concept is practically inexistent. Therefore, the first basic rule both the projects have been based upon, was the re-organization of the vertical data-flow. This activity includes data collection at peripheral level, forwarding for analysis and interpretation at central level, and finally feedback to the sub-national and local services. At the same time, horizontal communication is automatically provided by the exchanging and processing between the two sectors (public health and animal health) of all the data collected. The whole system is supported by a computerized network using a flexible software adapted to the country's conditions and needs.

Professionals (physicians, veterinarians and technicians), selected to operate the system, have been trained in all aspects relevant to their new duties and on the value and benefits of side-by-side work, co-ordination and contribution.

The new form of the epidemiological surveillance system is now in full and successful operation in four Governorates of Syria, where it is shortly expected to cover the whole country, and it is also progressing to meet its targets in Jordan.

The re-organization of the brucellosis epidemiological surveillance system in the above-mentioned two countries, including the horizontal intercommunication for the first time established, is of utmost importance. It reduces underreporting at the lowest possible level, and better identifies the infection sources and cases distribution among different occupational, age, and other category groups. However, the most important achievement is that the inter-professional collaboration has been established and its beneficial effect has been understood and assessed.

The conclusion that could be drawn from the activities performed is that, besides agreements at theoretical levels upon crucial issues such as intersectoral col-

laboration and co-ordination, initiatives and activities should be translated into practice, being the only instruments which could really make evident the importance and benefits of adopting such strategies and practices.

CONCLUSIONS

Veterinary medicine has its origins in two main roots: farriery (which has developed into the modern private veterinary practice) and medicine ("one medicine") in which physicians, besides their usual responsibilities, were also involved in contrasting human and animal epidemics. This situation evolved into the modern veterinary public health embracing all veterinary activities associated with human health. Inter-disciplinary collaboration has been required by food inspection, human-animal relationship management, and control of zoonoses (once recognised). The social and economic consequences of animal pandemics drove governments to mobilise the best scientists available (who were often, but not always, physicians). The achievement of collaboration passed through alternating phases in the different historical times according to the advancements of science and the progress of individual economies.

The present, developed veterinary medicine has exacted its own autonomous space, and has now attained professional, social and scientific recognition as an au-

tonomous discipline with a number of specialisations. Various forms of collaboration have grown both inside the professional fields (mixed practices, public health teams) and among other professions involving different public health operators who also include professionals only occasionally interested in the sector.

Building up collaboration is a slow process, which in some areas is already advanced, is just beginning in others, but has still to start in the majority of regions.

The WHO/Mediterranean Zoonoses Control Centre was born as an inter-professional organism 26 years ago and has always worked in order to build and foster an inter-disciplinary culture. Recently, important results have been achieved in the control of human and animal brucellosis in Jordan and Syria.

The EU has supported the inter-professional approach in the field of foodborne zoonoses through a series of legislative and professional initiatives. These are based on the improvement and standardisation of diagnostic procedures and surveillance. The exchange of information at the national and international levels is also mandatory. Of particular importance is the constitution of the Med-Vet-Net network, within the "Quality and Safety of Food" Priority Area, aiming at harmonising the controls throughout the "whole food-chain" in the EU.

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