



Photo by A. Mantovani

Veterinary urban hygiene in developing countries

Zoonosis

Zoonoses have been defined by WHO (1959) as “*Those disease and infections (the agents of) which are naturally transmitted between (other) vertebrate animals and man*”. Recently the concept has been enlarged with the following proposal: “*Any detriment to the health and/or quality of human life deriving from relationships with (other) vertebrate or edible or toxic invertebrate animals*”, Mantovani 2000).

In general, little attention is paid to animal-connected problems in developing countries, unless they are linked with the export of animals or animal products. For example, brucellosis is widespread in many countries, but it is often overlooked when it affects humans (confused in the “malaria complex”), or not considered important in animals unless they have to be exported to other countries that do not accept positive animals, or because

they have controlled brucellosis, or because brucellosis is absent. Other zoonoses that are sometimes of economic importance include anthrax, bovine tuberculosis, glanders, taeniasis/cysticercosis and trichinellosis. Infections which cause important pandemics in animals, such as foot and mouth disease and rinderpest, are not considered zoonoses in the classical sense, but must be considered important public health problems because of their consequences on human nutrition, economy and quality of life.

LOCAL FACTORS

Local factors, including cultural background, economic conditions and relig-

ious beliefs influence specific conditions, especially in developing countries. Consequently, a list of the zoonoses, which may be important in an urban area must take different factors into consideration, for instance:

- ❖ Close proximity of humans to different species of animals kept together with little or no distinction between companion or utility functions (dogs, cats, farm and barnyard animals).
- ❖ Trade and barter of animals facilitates the exchange of pathogenic agents with poor surveillance over the provenance and health status of individual animals and stocks.
- ❖ Pigs, cattle, sheep, goats, horses, camels and poultry may be left to graze freely along the roadsides and any suitable place, feed on available vegetables, garbage and drinking water.
- ❖ Animals or large groups of animals often cross or rest in urban areas and may disseminate their pathogens and vectors. Pigs, cattle, dogs and other animals may have free access to human faeces and feed on them, while humans and other animals

Adriano Mantovani
WHO/FAO Collaborating Centre
in Veterinary Public Health
✉ afapp@libero.it

are often exposed to dog and cat faeces.

- ❖ Animal waste and possibly infected materials are left to dogs, cats, pigs, domestic ruminants and scavenger species which roam among dwelling places and human communities.
- ❖ Small or family abattoirs are often located close to human dwellings. Slaughtering is often carried out in the open air in the absence of controls; butchers and abattoir workers are exposed to zoonoses and occupational accidents.
- ❖ In some towns there are large flocks of pigeons, starlings, seagulls, vultures and other birds that are in close contact with the population. The same applies to rodents, monkeys and other animals.
- ❖ Lack of inspection of meat and other products.
- ❖ The use of animal manure for cooking (fuel source) is risky as it may introduce pathogens into the cooking area such as salmonellae, and create the same problems as solid fuel.
- ❖ Where human malnutrition, AIDS and other immunodepressive conditions are widespread, these constitute a predisposing factor for zoonoses.
- ❖ Where (urban) rabies is present, it generally constitutes the first priority for veterinary public health and influences the relationship between persons and dogs and sometimes with animals in general. Stray and free roaming dogs constitute a potential danger for the transmission of zoonoses (leishmaniasis, echinococcosis/hydatidosis etc.) and other problems (e.g. bites).

Conditions such as very hot and/or damp (or dry) climates, and emergencies (famine, drought, etc.) may favour the circulation of infections through increased virulence of pathogens and activity of vectors, and decreased resistance of human and animal populations. These factors may also result in the transmission of infection becoming continuous throughout the year without any seasonal resting spells.

Another crucial issue is the removal and disposal of animal waste from cities.

Whenever possible and convenient, recycling should be recommended. Too many materials which could be used as fertilizers, animal feed or in other ways are lost as a result of lack of organization and/or of public education. On the other hand, any sort of garbage that is left to animals facilitates the lifecycle of zoonoses (e.g. echinococcosis/hydatidosis, taeniasis/cysticercosis, salmonellosis).

VETERINARY URBAN HYGIENE

The World Health Organization (WHO) and its branch, Veterinary Public Health (VPH) started to show specific interest in the problems of urban areas in 1977, and developed a series of activities under the title Veterinary Urban Hygiene (VUH). These activities have evolved mainly in developed countries, as they require considerable resources, adequate veterinary organization and political support. In developing countries the VUH activities are often very limited, performed by governmental agencies (ministries of health, agriculture, interior) and sometimes supported by international organizations (WHO, FAO, OIE: World Animal Health Organisation, etc.) by foreign governments (bilateral and multilateral agreements) and by non governmental organizations. In the Mediterranean these activities are co-ordinated by the Mediterranean Zoonoses Control Centre. The activities of VUH may be divided into different categories, which to some extent overlap:

- ❖ Rabies control and connected activities (dog population control, etc.);
- ❖ Control of other infections transmitted by animals (e.g. leishmaniasis, brucellosis, etc.);
- ❖ Control of economically important animal diseases (e.g. rinderpest, foot and mouth disease, sheep pox, parasitoses etc.);
- ❖ Hygienic control of food of animal origin (“from the farm to the table”) in slaughterhouses, markets, food stores, restaurants etc.;
- ❖ Control of economically important animals in urban areas (situation *rus in urbe*: countryside in the city);
- ❖ Controls in rural areas which have acquired characters (and problems) of urban areas (situation *urbs in rure*: city in the countryside);
- ❖ Control of populations of synanthropic animals (e.g. pigeons, cats, rodents,

monkeys) creating problems in urban areas.

International and national agencies interested in health, nutrition, the environment and economies of developing countries are inclined to employ the modern methods which are applied in high income countries, such as HACCP (Health Analysis Critical Control Points) and HSR (Health System Research). Often, however, the local technical and economic bases are not strong enough to permit the application of these methods. In almost all cases it is necessary to pay attention to numerous prerequisites concerning applicability of VUH to the local situation. Priority establishment is unavoidable. Where political support and adequate resources are provided, research and training will furnish the cultural and human background needed. Collaboration with the medical and other existing services has to be established, as VUH is a multidisciplinary practice, encompassing all sectors involved in urban policy and management.