8. Community participation

The participation of the public in all health programmes for the community is essential. If public participation is not an integral part of such programmes, when executed at the local level, they are unlikely to succeed. Community members should be completely involved in the implementation of health programmes in their communities. They have the important advantages of speaking the local dialect, of knowing how to reach people and animals, and of being socially acceptable. Both in rural and urban areas, community groups such as local administrations, religious bodies, civic groups and police etc. are very important in the planning and implementation of programmes. They provide the resources needed to adapt plans to local conditions, to carry out tasks at little or no cost, and to overcome local constraints. They must be informal in their approach and fully informed on their role in achieving the aims of the programmes.

A list of civic groups which could play an important role in relief action at the local level is given in Annex 2.

9. Army Veterinary Corps

In many armies, there is a veterinary corps. Such a body should constitute an essential component of all aspects of veterinary intervention, especially in the early phases of an emergency. A veterinary corps is already provided with the technical and human resources to cope promptly with most of the above-mentioned

responsibilities of veterinary task forces. In most instances army veterinarians will be the first to arrive in the emergency area. The army veterinary corps should always be included in the framework of the National Veterinary Emergency Committee and its field activities strictly coordinated with those of the civilian organizations.

Furthermore, special military rescue units can be called upon to operate in the earliest phases of the relief action in order to save human lives.

10. Volunteer associations

Volunteer associations can play an important role in disasters. Volunteer groups could include highly qualified persons, including veterinarians and related personnel, ready and able to give unconditional aid to existing official organizations. However, these as well as other volunteers should not be left to their own initiative: their work should be coordinated with the official veterinary services.

Some voluntary international organizations were represented at the Workshop. They included:

1. Ente Nazionale Protezione Animale: a non-profit organization recognized by the Italian government, devoted to animal welfare;
2. Bioforce development: which specializes in dealing with health

problems in developing countries;

3. Vétérinaires sans frontières: equipped with mobile units for stray dog control and the implementation of vaccination and prophylactic programmes.

Reference was also made during the discussion to the valuable part which radio amateurs could play in communications network in disasters.

11. International Organizations

Technical agencies of the United Nations system and non-governmental organizations with their facilities, expertise and technologies are available to assist countries on request. One of the functions of WHO is to provide assistance in disasters after it has been asked for by a Government and the request accepted by WHO. Article 28 of the WHO Constitution authorizes the provision of emergency assistance to cope with situations calling for immediate action and provides for the establishment of a special fund under Article 58 for this purpose.

The mechanisms of international technical cooperation have been laid down for European Countries in the WHO/EURO Guidelines on Disaster Preparedness. A similar mechanism can become operative through WHO in the control of emergencies caused by epidemics of communicable diseases.

The criteria for WHO involvement, when a request from a Member State is submitted, can be summarized as follows:

i. the situation is a genuine emergency;

ii. the situation threatens to become an emergency if appropriate measures are not taken;

iii. the national resources for meeting it are insufficient;

iv. the additional resources from other countries or agencies which can be foreseen at the time are also not sufficient or are not available in practice.

On the other hand, even though no request has been received, WHO can offer emergency assistance to a government provided that:

i. it is clear that WHO assistance would materially improve the resources locally available to meet the situation;

ii. the situation is such that there is a threat to the public health of the country and surrounding countries.

WHO's objectives are to provide in the shortest possible time whatever technical support is necessary to control an outbreak, to strengthen the self-reliance of countries and to develop international cooperation.

12. The re-establishment and improvement of veterinary services

It is possible for a complete breakdown of local veterinary services to occur as a result of a disaster. In such an event operational teams of veterinarians should be sent into the area in the immediate post-disaster situation to perform all veterinary tasks.

Once the acute phase is over, every effort should be made to re-establish a comprehensive veterinary service and to improve it.

The twinning system has been recognized as useful in such forms of assistance, tasks and problems in the affected area being supported by twinned area personnel.

In some cases these objectives could also be achieved by sponsoring and assisting the settling of veterinarians in the stricken area. Even volunteer organizations could play a very important role in such an arrangement.

It is important that, at all stages, effective communication be maintained between veterinarians within the disaster area and those outside, in order to ensure the availability at all times of an adequate number of veterinarians, facilities and supplies. This is particularly important in the case of an outbreak of a disease epidemic following a natural disaster when vaccination programmes need to be quickly started and the movements of animals forbidden or controlled.

The re-establishment of veterinary services in the stricken area can provide the opportunity to improve the veterinary organization and livestock husbandry and production, as follows:

i. starting or strengthening control programmes against animal diseases according to the epidemiological data collected during the emergency phases;

ii. continuing activities started during the emergency phases such as stray dog and pest control;

iii. improving management and breeding, introducing cooperative farming where applicable;

iv. improving animal feeding and food distribution systems;

v. improving veterinary public health education programmes and promoting continuing education of the community as a whole;

vi. improving epidemiological monitoring of animal diseases and the veterinary surveillance system.

13. Information, surveillance and evaluation

A broad approach to health problems related to natural disasters should be adopted and emergency health measures should be programmed not only at national or regional level but even decentralized locally in order to allow their rapid implementation.

Such detailed planning needs the advanced education of the community, in order that emergency operations can be started without delay and the fullest possible participation of the community ensured.

It is recognized that after every disaster there is a great gap between real needs and the resources allocated: the lack of suitable plans together with difficulties in obtaining essential information have been identified among the principal causes of this gap.

The application of modern epidemiological techniques should assist in bridging this gap. In the management of health problems in natural disasters, epidemiology could have several applications, especially in regard to:

i. rapid assessment of health needs;

ii. continuous monitoring of health problems;

iii. surveillance of possible epidemics;

iv. health inventory evaluation;

Veterinary public health problems are likely to be similar in every kind of disaster, but priorities could differ. It is essential, immediately after a natural disaster, to have an assessment of needs made as early as possible.

A system of rapid evaluation of losses and damage is essential in order to be able to channel the initial external aid or further assistance on a priority basis. An information system of this sort should be incorporated in the information system for the basic health services.

Because of the variety and nature of the problems caused by disasters, as well as the degree of uncertainty and the urgent need for rapid action, information should also be identified, collected and analyzed by specially qualified personnel.

In the early phases of an emergency, staff of the local health authorities must perform this task and it is important therefore that they receive an adequate training in data collection and processing and basic methodologies.

Information collected at the local level must be communicated to higher levels from a single source responsible for this function. This should help the national authorities both to direct and channel external aid, so as to meet the real needs. This information is

essential and should be associated with demographic data gathered in advance, especially in those areas at high risk to natural disasters.

In the same way, an inventory of local resources (infrastructure, equipment, etc.) should be prepared and be kept up-to-date in order their to allow immediate mobilization.

Table 3 contains the relevant information which should be gathered in advance.

Assessment of losses and damage is often beyond the capacity of the local community, and hence specialized staff or special techniques (epidemiological evaluation or aerial reconnaissance) must be used.

Even if disasters often cannot be prevented, it should be recognized that health-related problems are largely avoidable. Research on epidemiology and prevention contributes to reducing health risks. Epidemiological studies could also assist in evaluating intervention, and therefore in optimizing planning and resource allocation.

Studies should be directed towards the preparation of reliable indicators for a rapid epidemiological evaluation of a disaster situation. They should be relatively simple in order to allow immediate decision making.

Epidemiological surveillance is an essential measure in a disaster situation and should already be a component of the health information system of the region. Epidemiological surveillance should not be confined to the first phase of the emergency, but should continue through the intermediate phase to the restoration of normal situations and subsequent rehabilitation.

Table 3

Items for inclusion in local resources inventory

1. Public veterinary services:

   i. number and allocation of offices, veterinarians, auxiliaries, clinics
   ii. number and allocation of slaughterhouses, rendering plants, refrigerators, dairies, etc,
   iii. number and allocation of laboratories
   iv. facilities for control of dogs and other pests
   v. facilities for destruction of carcasses or other material

2. Private veterinary practitioners

3. Farm animals:

   i. number, species, location of livestock, stables, etc.

4. Dogs

5. Synanthropic and wild animals of potential public health importance

6. Noxious animals:

   i. vectors of diseases
   ii. snakes and other venomous animals

7. Endemic zoonoses and non-zoonotic diseases:

   i. vaccination and prophylactic programmes

8. Food habits of the population and food resources from animals

9. Livestock nutrition: local habits, availability and technologies

A system for evaluating the impact of assistance is a key requirement in the medium-term and long-term objectives to assess if adopted measures have been efficient.

The main purpose and objectives of the surveillance system consist of the following:

i. providing a survey of infectious animal diseases, particularly zoonoses, by the establishment of diagnostic and epidemiological intelligence systems (see Table 4);

ii. monitoring the veterinary health needs, such as clinical or zootechnical assistance, etc.;

iii. evaluating local and general losses;

iv. organizing a monitoring system to evaluate the development of problems;

v. organizing veterinary programmes and evaluating their efficacy.

Table 4. Scheme of a surveillance system for zoonoses and foodborne diseases*

2. Establishment of surveillance	2.1 Establish diagnostic services	2.1.1 Clinical/pathological diagnosis 2.1.2 Field tests 2.1.3 Laboratory tests		
	2.2 Establishing epidemiological intelligence service	2.2.1 Data collection (passive notification, active survey)	2.2.1.1 Field 2.2.1.2 Clinical facilities (medical/veterinary) 2.2.1.3 Diagnostic laboratories 2.2.1.4 Slaughterhouses 2.2.1.5 Other	
		2.2.2 Data processing and analysis	2.2.2.1 Local, coordinated 2.2.2.2 National 2.2.2.3 International/regional	
		2.2.3 Prompt feedback to those who need to know	2.2.3.1 Contributors of raw data 2.2.3.2 Programme planners and implementors 2.2.3.3 Others	

* from: WHO Technical Report Series, n. 682, 1982 (Bacterial and viral zoonoses: report of a WHO Expert Committee with the participation of FAO)

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Animal health monitoring could furnish useful information on actual and potential risks for human health, derived from infectious agents and even chemicals and radiation.

Even if emergency situations might seem to require other priorities, public health surveillance through animal monitoring could also play an important role in the organization both of the first relief action and the later phases of intervention.

After the earlier phases, significant modifications in the epidemiological situation may be noted since the emergency could in fact stress the relevance of a problem and even put in perspective previously underestimated risks for animal and human health which would furnish the basis of epidemiological data for priority assessment.

Thus, during the later phase of an emergency, medical and veterinary services should work in the closest collaboration. Information about real or potential risks for human health, for example, should be quickly reported to the medical services which, in return, should provide information about animal diseases, bites, zoonoses, etc.

14. Care of domestic animals

The veterinarian has a responsibility to ensure that all animals are adequately fed and cared for. The measures which should be adopted to achieve these objectives will be largely determined by the kind of disaster.

Broadly speaking, interventions in the zootechnical field should be stressed because of the need to preserve a basis for future local agricultural activities.

However, it is important that priorities be set in accordance with prevailing circumstances. For example, the provision of feed and clean water is always essential and should be considered more important than the immediate provision of shelter.

As a first stage, a census or reconnaissance of the composition of the livestock in the area, by species, breeds and age should be made. Also information about animal health facilities and personnel available, as well as an evaluation of feed self-sufficiency is useful.

In a second stage, those animals which have been left without shelter or assistance should be collected. Some might wander through the area, representing a hazard to relief personnel. Collection centres should therefore be organized and two alternatives have been recognized in regard to the importance of saving the potential local zootechnical resources:

i. to collect animals of high genetic potential at centres far from the stricken area;

ii. to collect animals in centres chosen by the farmers' organizations and the local veterinarians close to the areas of origin of the stock.

The second alternative seems preferable because it allows the

genetic potential of local breeds to be conserved and provides for a greater involvement and participation of the community and of livestock owners. Furthermore, it avoids concentrating a large number of animals of different origins in restricted areas.

In any case a high concentration of animals of different species and ages, and especially from different localities, should be avoided in order to prevent the spread of communicable diseases. Other preventive measures such as the acceptance only of cattle vaccinated against foot-and-mouth disease and originating from tuberculosis-free and brucellosis-free farms are also advisable. Veterinary services should keep these centres under strict surveillance.

Centres for the collection and storage of animal feed should be established to receive the feed given by international or national aid, as well as local feed including agro-industrial by-products.

The concentration of all the feed resources in one or more centres under the direct control of VETF personnel facilitates an impartial distribution, thus avoiding speculation and the granting of special favours. This system would also allow better control of feed availability and supplies.

Redundant products normally used for human consumption but exceeding the needs of the local population, could contribute to animal rations. Milk and bread, for example, could be utilized for feeding both pigs and ruminants.

When a natural disaster occurs, the delivery of water is often interrupted and an emergency supply of water then becomes essential. Generally, surface water does not create problems for watering animals

if it is not stagnant or contaminated by biological material or chemical and radioactive agents.

The milking of lactating farm animals is an obvious necessity. The milk should be consumed by the human population only after boiling or after processing in dairy plants. Alternatively, it may be used for feeding animals.

Veterinary assistance has a very important role, from a psychological point of view, in helping farmers to remain in agriculture instead of abandoning their farms and selling their animals. Veterinary services should have clinical, surgical, obstetrical, zootechnical and prophylactic facilities. These services should aim at practical solutions of the problems and if possible veterinary assistance should be offered without charge.

Mobile diagnostic laboratories should be employed to support the work of the veterinarians in:

i. controlling abnormal mortality or morbidity in animals;
ii. making periodical diagnostic tests to control the animal health status of animals in the area;
iii. educating the public in elementary hygienic measures to prevent the onset of epidemics and increased risks from zoonoses.

If necessary, a prophylactic programme of vaccination against selected animal diseases could be started, but mass antibiotic therapy of animals is not recommended. In regard to sick or injured animals, a decision should be taken as to whether to treat them or to slaughter

them. Animals which are severely injured should be slaughtered and the meat, if safe, utilized for local consumption.

15. Control of zoonoses and other animal diseases

Factors which increase the risk of human diseases related to animals and animal products could occur and could be magnified in natural disaster situations.

Intrinsic risk factors in a disaster situation can be summarized as follows:

i. stress which increases human and animal susceptibility;
ii. increased possibility of close contact between man, domestic animals and other animal categories (e.g. pests, etc.);
iii. uncontrolled spread of pests and vectors;
iv. exposure of man and animals to infections of environmental origin and to arthropods, vectors and pests;
v. lack of hygienic disposal of dead animals and waste of animal origin;
vi. lack of food hygiene and basic sanitation measures;
vii. inadequate organization of mass catering;
viii. breakdown of storage procedures and food distribution; lack of proper waste disposal.

Extrinsic risk factors in a disaster situation can be summarized as follows:

i. movement of personnel, volunteers and visitors who may bring exotic or external infections into the area;

ii. movement and migration of animals;

iii. feed, food and other products of animal origin capable of carrying exotic infections;

iv. inadequate potency, safety or specificity of biological and other substances used in treatment, disinfection, pest control, etc.

However, even if the danger of transmission of zoonoses or foodborne diseases is increased because of the above-mentioned factors, few epidemics have been reported following natural disasters. They have consisted of leptospirosis following flooding, salmonellosis and gastro-enteric infections resulting from the consumption of contaminated meat and milk, tularemia from infected water, and taeniasis/cysticercosis, trichinellosis, and dermatophytosis, etc.

Zoonoses control should be considered a priority not only from the public health point of view, but also because the conservation of the agricultural and zootechnical potentialities of the area depend upon adequate animal health standards. Many zoonoses have important effects on animal production, others cause rejection of animal products or a restriction of trade, making the socio-economic rehabilitation of the population stricken by the disaster more difficult.

Zoonoses may be classified in accordance with the mode of transmission (see Table 5).

Table 5. Classification of zoonoses and other diseases of animals according to transmission

1. Direct contact: e.g. rabies, Q. fever, brucellosis, tuberculosis, dermatomycosis

2. Indirect transmission: e.g. echinococcosis/hydatidosis, larva migrans, gastro-intestinal helminthoses of animals

3. Contact with contaminated animal carcases: e.g. anthrax, swine erysipelas, tularemia, Rift Valley fever

4. Contact with contaminated water: e.g. leptospirosis, tularemia, anthrax, schistosomiasis

5. Arthropods: e.g. viral encephalitides, Rift Valley fever, boutonneuse fever, leishmaniasis

6. Food of animal origin: e.g. Rift Valley fever, salmonellosis, brucellosis, tuberculosis, anthrax, taeniasis/cysticercosis, trichinellosis

Available information on epidemic zoonoses present in the region or surrounding areas, as well as on vectors and reservoirs should be collected in advance.

Broadly speaking, general measures for the control of zoonoses and other animal diseases of infectious origin may be summarized as follows:

i. activating a surveillance and information system (see Table 4);

ii. building up mutual collaboration between medical and veterinary services, and other agencies and services involved in the

relief action;

iii. limiting or avoiding close contact between people and animals;

iv. avoiding the consumption of inadequately cooked meat and milk, or potentially contaminated vegetables;

v. controlling stray dog populations;

vi. avoiding environmental contamination with animal wastes;

vii. starting pest control programmes;

viii. starting education programmes for the public and health officials;

ix. limiting the movement of all animals;

x. stamping out animal diseases in appropriate circumstances.

The usefulness of mass vaccination programmes as an immediate control measure is debatable but a distinction should be drawn between epidemic diseases in which vaccination programmes play an important role (e.g. rabies, foot-and-mouth disease, hog cholera, Newcastle disease) and other diseases where vaccination is not required.

16. Stray dog control

Natural disasters lead to greater contact between man and animals and to an alteration of the ecosystem. In this situation public health risks from stray dogs are increased.

Garbage and animal carcases strongly attract stray dogs.

The main risks from an uncontrolled dog population include:

i. zoonoses such as rabies, leptospirosis, salmonellosis,

echinococcosis/hydatidosis, leishmaniasis, larva migrans, etc.

ii. attacks and bites;

iii. nuisance to the general public, through fouling, scavenging, barking etc.;

iv. traffic accidents;

v. attacks on other animals and damage to food stores;

vi. disfigurement of human corpses.

Although stray dog elimination may cause reactions from animal welfare associations, usually there is no practical way of dealing with stray dogs other than by capture and euthanasia. If possible, specialized mobile units should be set up. Dogs should be captured by whatever means are available, destroyed humanely and their carcases should be either incinerated or buried. A local ordinance should be issued authorizing the capture and destruction of dogs by competent personnel.

Dog owners should be made aware of their responsibilities, not only for their own dogs but also for those of the community. Dogs should be kept under control at all times and should not be allowed to roam. They should be properly cared for and fed.

Important recommendations are made in the Manual for Stray Dogs Control in Mediterranean Countries, published by the Mediterranean Zoonoses Control Centre, Athens.