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RECOMMENDATIONS ON ZOONOSES AND FOOD HYGIENE IN LEBANON  
WITH SPECIAL REFERENCE TO RABIES AND HYDATIDOSIS

by

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This report is divided into two sections: Section A will consider briefly general aspects of veterinary public health in Lebanon; Section B will be concerned with a detailed consideration of rabies and hydatidosis control.

SECTION A - GENERAL CONSIDERATIONS ON VETERINARY PUBLIC HEALTH

1. Veterinary Public Health

The specific activities in veterinary public health as considered below provide an excellent opportunity to establish closer cooperation between Ministry of Health and Agriculture officials. Close cooperation between health, veterinary and agricultural officials is essential for improving health conditions in rural areas, especially with respect to the zoonoses (see report of the Technical Discussions of the Seventh World Health Assembly). As will be seen below, two zoonoses, rabies and hydatidosis, require urgent attention. Fortunately, the control of these diseases is neither difficult nor expensive and they provide the possibility of concrete accomplishment in a relatively short period of time.

2. Food Hygiene

This question has been excellently covered by Prof. A. Jepsen in his report following his visit to Lebanon in 1953. With respect to Prof. Jepsen's recommendations on slaughter-house construction, Point IV authorities have evinced a great interest and apparently would be prepared to assist in implementing these recommendations.

The Eastern Mediterranean Regional Office of WHO is considering the possibility of a food hygiene training course for its member countries, and it is strongly recommended that Lebanon participate in such a course if it materializes.

3. Brucellosis

A survey on the prevalence of this disease is advisable. Simple survey techniques utilizing plate agglutination tests and milk ring tests are suggested. The very limited knowledge available now in Lebanon appears to indicate that brucellosis is of minor importance. This is considered doubtful since brucella melitensis infection has been shown to be highly prevalent in recent surveys of neighbouring and nearby countries. Similar surveys in sheep and goats especially are therefore recommended for Lebanon.

4. Bovine tuberculosis

Although this disease at present does not appear to be a great problem, it should not be allowed to gain headway within the country. Plans should be made, therefore, for systematic tuberculin testing of cattle and the provision of governmental indemnities for the slaughter of infected animals.

5. Q Fever

Although a limited number of tests have failed to reveal any appreciable infection in Lebanon, experience in surrounding countries has shown these countries to be highly enzootic foci of Q fever infection. The possibility of a similar state of affairs in Lebanon should be kept in mind.

## 6. Rabies and Hydatidosis

These are considered in Section B.

## 7. Laboratory procedures

It is noted with satisfaction that a veterinary laboratory has been planned and should be completed within the next year. Problems concerning this laboratory have been discussed with Dr. Joseph Asmar, Director of the Veterinary Services, and Dr. C.T. Beechwood of Point IV. It should be stressed that duplication of activities should be avoided in a country like Lebanon. Thus rabies vaccine production and diagnostic services, serological tests for brucellosis and Q fever (human and animal sera), and other similar activities should be limited to one laboratory. It is felt that the new public health laboratory is better suited and equipped for this purpose. WHO will be glad to assist on all technical questions with respect to laboratory diagnostic and production procedures.

### SECTION B - COMBINED RABIES AND HYDATIDOSIS CONTROL IN LEBANON

The seriousness of rabies in Lebanon can be estimated by the fact that 500 to 1000 individuals per year are bitten by dogs and most of the persons have to receive a course of the Pasteur treatments. Between 180 and 200 positive cases in animals occur annually and several human deaths are recorded each year due to rabies. For a small country, these figures are disturbing, not only because of the deaths and the long, very unpleasant and costly series of treatments undergone by bitten persons, but also because the continued presence of rabies in rural and urban communities is a highly disruptive factor in communal life.

Hydatidosis constitutes a severe problem in Lebanon. Approximately 33% of adult dogs surveyed in Beirut harbour the adult tape worm Echinococcus granulosus, and human infection is very common. Experience in other countries has shown that hydatidosis control can very well be combined with rabies vaccination of dogs.

During my visit to Lebanon, close attention was paid to the possibility of organizing effective control procedures with facilities available in the country, and without undue expense. Discussions were held with the various competent authorities of the Ministries of Health and Agriculture, City of Beirut, Point IV, French University and American University of Beirut. The conclusion derived from these discussions and personal observations is that rabies control in Lebanon is a feasible undertaking and steps towards this end should be started without further delay. Hydatidosis control is a secondary consideration but should be combined whenever and wherever possible with rabies control. The technical aspects of rabies control, including organization and implementation of a rabies control campaign and the mass vaccination of dogs, were discussed with the Rabies Commission, Point IV and government officials, and WHO will be glad to give whatever further technical advice is required in the matter. In this report, therefore, only the broad outlines of requirements for rabies and hydatidosis control will be considered and the more highly technical aspects of the problems will not be covered.

#### Basic features of a control campaign

##### A. Centralization of authority

The Rabies Commission as presently organized is perfectly adequate to deal with all technical problems concerned with the disease, and the Commission should be considered as the final advisory authority within the country. For specific technical details, WHO can always be consulted. A single individual from the Commission or from the Government should be designated as the rabies control officer for the entire country and this officer should coordinate all rabies activities. It is suggested that Dr. Joseph Asmar, Director of the Veterinary Services, be designated for this purpose since past experience has shown that a veterinarian is the most suitable professional person to coordinate a rabies campaign.

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## B. Establishment of a routine reporting system

Until the disease is brought under control throughout the country, weekly reports should be submitted to the rabies control officer by district, village and municipal health and veterinary officers, or other officials (village chiefs, etc.), with respect to:

- (1) number of dog bites;
- (2) number of animals under detention for observation; number of stray animals destroyed;
- (3) clinically suspected cases of rabies in animals;
- (4) laboratory or clinically proved cases (death of animal with clinical symptoms of rabies during detention);
- (5) number of patients under prophylactic treatment.

## C. Diagnostic Services

Adequate diagnostic facilities are important in rabies control. Two types of services are required:-

- (1) Laboratory examination - histological and biological
- (2) Clinical observation of suspected animals.

Laboratory - At present the Anti-Rabies Institute of the French University is the only laboratory equipped for histological and biological tests. This service will, correctly, be undertaken by the new Public Health Laboratory. The submission of specimens from the countryside and cities requires improvement and it is recommended that the methods given in the WHO Monograph on Laboratory Techniques in Rabies be circulated to health officers, veterinarians, police and other officials throughout the country.

Clinical observation - This will require the construction of several dog cages at convenient places throughout the countryside as well as in municipalities, in order to keep suspected biting dogs under observation.

## D. Arrangements for treating exposed human beings

At present, all prophylactic treatments of human beings are given at the Anti-Rabies Institute in the French University. The shift of rabies vaccine production from the French University to the new Public Health Laboratory is desirable. I support also the proposed change of vaccine from rabbit brain to a sheep brain, phenolized, Semple-type vaccine. This type of vaccine will permit a decentralization of vaccine procedures from human beings, which would be highly desirable since early treatment could be instituted in exposed individuals and a prolonged stay in Beirut would not be necessary. Semple-type vaccine retains its potency for long periods when stored at ordinary refrigerator temperature, and this storage could easily be arranged in various health offices throughout the country. The use of vaccine in human beings should follow the recommendations made by the WHO Expert Committee on Rabies in its Second Report. The Rabies Commission is familiar with these recommendations, and physicians should be familiarized with the procedures involved in bite wounds and prophylactic vaccination. This information can most readily be disseminated by publication in the medical journal of Lebanon, or through appropriate channels of the Ministry of Health.

## E. Mass vaccination of dogs

### 1. The vaccine

One inoculation of the new Flury strain chicken embryo vaccine gives a solid immunity for at least 3½ years and probably much longer. A well-prepared potency tested phenolized vaccine gives good protection for 1 to 2 years and a

fair degree of protection remains for as long as 3 years. It is recommended, therefore, that if possible, the Flury strain of chicken embryo vaccine be used in the control campaign. From discussions held with Government officials and Point IV representatives the procurement of chicken embryo vaccine should offer little or no difficulty and there should be no necessity of charging the public for vaccination. The free vaccination of dogs is of the utmost importance when rabies campaigns are first undertaken in an area. The mass vaccination of dogs with an effective vaccine would, without doubt, be the principal factor in bringing rabies under control in Lebanon. Mass vaccination, however, must be combined with stray dog control (see below).

## 2. Organization of campaign

The general procedures advocated by the WHO Expert Committee on Rabies should be followed, and the Rabies Commission is fully conversant with these requirements. Experience in many countries has shown that:

- (a) Mass vaccination of dogs should be free of charge, if possible;
- (b) the vaccination procedure should be combined with the registration and licensing of dogs;
- (c) in a given area, vaccinations should be carried out and completed within as short a period of time as possible (a few weeks at most);
- (d) during the vaccination campaign, elimination of stray animals should be carried out vigorously and should be continued, although perhaps on a slightly less intensive scale, throughout the year;
- (e) Several weeks publicity should be given prior to the actual vaccination of animals. The publicity should include press and radio notices, cinema notices, posters and any other media available;
- (f) where indicated, hydatidosis control procedures can be effected at the same time.

### (a) Free vaccination

The prime object of the campaign is to vaccinate as many dogs as possible, and this can be done in a country like Lebanon only by making the vaccination free of charge. As will be noted below, this does not exclude the possibility of a small charge for registration purposes, but stress should be laid on the fact that owners can have their dogs vaccinated free. Police coercion should be avoided as this usually impedes rather than helps a vaccination campaign.

### (b) Registration and licensing

This procedure is carried out simultaneously with vaccination, since the principal purpose is to identify vaccination dogs and to facilitate the removal of stray animals. A very moderate charge can be made for registration and licensing purposes, and it is suggested that a sum not exceeding Leb.£ 1 per animal be fixed for this purpose. Since many dogs do not have collars, an ear-tattoo is recommended for identification purposes combined with a metal or plastic collar tag for animals possessing collars. The lack of collars, however, should not discourage vaccination, registration and identification (ear-tattoo).

A vaccination team should consist of a minimum of one inoculator, one assistant and one clerk working under the general supervision of a veterinarian. It is preferable to have a veterinarian do all of the actual inoculations, since the vaccine must be given intramuscularly or else it loses much of its value. If trained inoculators are used, they must be conscientious workers and under veterinary supervision. (Where hydatidosis control is combined with rabies vaccination, two more assistants are required - see (g) below).

(c) Rapid vaccination of an area

The principal reason for this procedure is to take advantage of public interest once it has been stimulated in a rabies campaign. Experience has shown that the public response to bringing dogs for vaccination slackens off appreciably over a period of time.

(d) Stray animal control

The rabies control campaign will not succeed unless vigorous and continued action is taken against stray animals. This applies particularly to dogs. While stray cats should also be eliminated, experience has shown that the control of the dog population by vaccination and elimination of strays will control at the same time a rabies problem in cats. All stray dogs without adequate identification (ear-tattoo or collar tag) should be destroyed without delay in a humane manner (preferably carbon monoxide gas). Properly identified dogs should be held for a maximum of 48 hours pending recovery by the owner. There are too few kennel facilities in Lebanon to hold dogs longer than the 48 hour period, and whatever kennel facilities are available should be utilized as far as possible for holding dogs under observation as suspected rabies cases. During a vaccination campaign and for 30 days thereafter all owners should be advised to keep their dogs on leash, otherwise the dogs would be picked up and held for the maximum 48 hour period. Dog owners reclaiming dogs during this period should be fined moderately.

Shooting and poisoning as a means of stray dog control should be confined to rural areas and should be performed under close supervision of the rabies control authorities. In municipalities, capture with nets and truck transport is the best method. Gas chambers can be conveniently built into the transport truck. Dog catching operations should be concentrated during the cool parts of the day and night when dogs are more apt to roam. During the vaccination campaign stray dog control should be carried out intensively but after the campaign is finished, it is important to continue the operation throughout the year, otherwise the stray dog problem soon gets out of hand and may continue the problem of enzootic rabies.

Jackal control - Control of these animals in the countryside should not be neglected. The best methods for control of these animals are shooting and poisoned baits (strychnine). If, however, facilities are too limited to carry out a combined stray dog and jackal control, emphasis should be laid on the dog problem as it has been found that control of the latter animals is more important.

(e) Publicity

At least 3 to 4 weeks intensive publicity by all available means is necessary prior to the start of actual vaccination and of stray dog control activities. Notices in cinemas, theatres, simple posters throughout the countryside and in municipalities, radio broadcasts, and newspaper notices should all be used. WHO will supply as a guide samples of publicity material used in other countries.

(f) Follow-up campaigns

All dogs 2 months old and older should be vaccinated. For puppies too young to be vaccinated arrangements should be made for owners to present their dogs for vaccination at a stipulated place and time in an area twice a year.

(g) Hydatidosis control

The essential features of hydatidosis control are the elimination of the adult parasite in dogs by anthelmintic treatment and supervision of abattoirs to prevent infected offal being eaten by dogs. The technical details of control have been supplied to the Veterinary Services. As stated previously, two more assistants will be required in a rabies vaccination team for hydatidosis control, one to give

the anthelmintic, and the other to supervise the dipping of the dogs in a disinfectant bath following defecation.

#### F. Control in rural areas and municipalities

Rural areas - It is recommended that the first campaign in rural areas be carried out in Chatoura (Bika Valley) in conjunction with the health demonstration project of Point IV. The experience gained here will be useful for application in other rural areas of the country.

Municipalities - Since the majority of dog bites and rabid animals occurs in Beirut and its surrounding territory, this area should be selected for rabies control first. While it is recognized that administrative difficulties might arise because the administration of Beirut is a separate governmental authority from its suburbs and surrounding territory, it is important that the city and its environs be considered as a single unit.

Because of the limited resources in veterinary and other personnel, it will be necessary to carry out the rabies control programme in sequence thereby gradually covering the entire country systematically. Ideally this should be a continuous procedure but it is realized that local difficulties will not permit this. It is stressed, however, that every dog successfully vaccinated provides a barrier against the spread of the disease to other animals and to man, and the burden of effort therefore should be directed towards vaccinating as many dogs as possible, with concomitant stray dog control.

#### G. Budget and administrative arrangements

The author does not feel competent to prepare a definitive budget for the activities outlined above. Preliminary conversations, however, were made in this connection with governmental authorities in Lebanon, and it is felt that by utilizing available personnel and receipts from registration, plus the assistance of Point IV, an effective programme can be put into operation without excessive cost to the national economy.

Officials of the Ministries of Health and Agriculture have shown their eagerness to cooperate in this connection. It is only by such cooperation that it will be possible for rabies to be brought under adequate control.

Since the brunt of operative responsibility will fall on the Veterinary Services which already are overburdened with important problems of livestock disease control, it is recommended that vaccination procedures be carried out in the afternoon with suitable compensation to the veterinarians provided for the additional hours involved. Unless the full cooperation of the veterinarians is assured the vaccination campaign will fail. In many countries veterinarians receive a fee for each animal vaccinated and registered. It is suggested that half the registration fee, i.e. Leb. \$½ be used for this purpose.

#### General remarks

The principles outlined previously have given highly successful results even in underdeveloped countries with a scarcity of personnel and facilities. It is believed, therefore, that Lebanon being in a more favourable position can undertake successfully the control programme.

A lag period of 4 to 6 months should be envisaged from the time a decision is made to carry out a programme and its implementation (procurement of vaccine, organization of facilities, etc.). An early decision on the matter in Lebanon is therefore urged.

Rabies can be controlled locally (in a municipality) or nationally by adequate dog vaccination and stray dog control. If a national programme cannot be carried out, local control programmes can be undertaken. The advantages of a nationwide programme, however, are obvious.

The rabies vaccine used, whether Flury strain chicken embryo or inactivated type vaccine, should be potency tested. WHO will give assistance in this connection as well as on any other technical problem.

Rabies control will succeed in direct proportion to the number of dogs vaccinated and the number of stray dogs eliminated. A programme envisaging a charge to dog owners for vaccination at the outset of a campaign and/or police compulsion for presenting dogs for vaccination will assure failure of the programme. After the country has been covered with a blanket of vaccinated dogs and rabies is under control, the continuing programme of stray dog control and vaccination of puppies as they reach a proper age can be supported from the charges made for vaccination and annual registration, and tax on dogs.

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