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REPORT
ON THE WHO/FAO SEMINAR ON FOOD HYGIENE, ZOOSES CONTROL
AND VETERINARY PUBLIC HEALTH PRACTICES

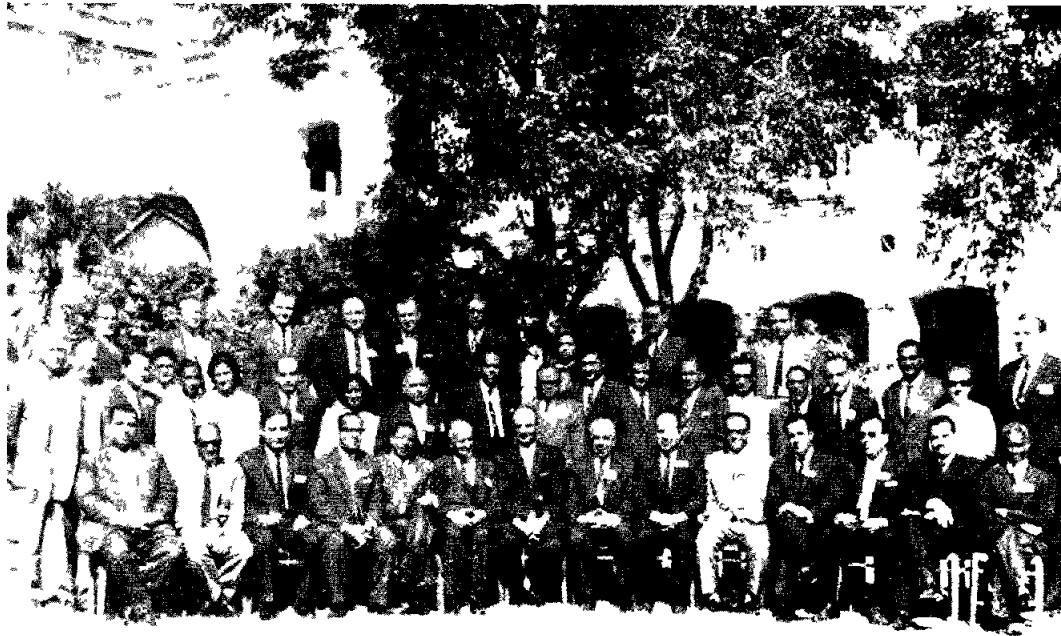
Lahore, Pakistan, 29 October to 6 November 1964

Teheran, Iran, 7 November to 11 November 1964

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE EASTERN MEDITERRANEAN

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PARTICIPANTS AND OBSERVERS WHO ATTENDED THE WHO FAO SEMINAR ON
FOOD HYGIENE, ZOOSES CONTROL AND VETERINARY PUBLIC HEALTH PRACTICES
HELD IN LAHORE PAKISTAN, 29 OCTOBER - 6 NOVEMBER 1964
AND TEHERAN IRAN 7 NOVEMBER - 11 NOVEMBER 1964

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PART I

INTRODUCTION

The WHO Regional Office for the Eastern Mediterranean, in collaboration with the Food and Agriculture Organization, organized a Seminar on Food Hygiene, Zoonoses Control and VPH Practice in Lahore, Pakistan, from 29 October to 6 November 1964, followed by a field visit to Teheran, Iran, from 7 to 11 November 1964.

The purpose of the Seminar was to bring together medical officers, veterinary officers and officers in charge of training as well as from the field of sanitation, to discuss among themselves and with WHO and FAO consultants the various diseases of public health and economic importance in the Region, as well as the major technical and administrative problems in veterinary public health which require attention to assure progress in public health.

The objectives of the Seminar were to define the major problems of food hygiene and specific zoonoses of the Eastern Mediterranean Region, to discuss the technical organizational methods for meeting these problems in terms of the facilities and resources available to the various countries, and to plan for the future development of veterinary public health activities for the Region, so that the combined resources of health, veterinary and agricultural authorities could be most effectively utilized in protecting and advancing human health.

1. ORGANIZATION OF THE SEMINAR

(a) Members

Fourteen countries of the Region were invited to nominate participants. Twenty-seven candidates were nominated by their respective Governments but only twenty-four attended. One participant

from Turkey, European Region, also attended. Participants consisted of medical officers (epidemiologists, public health workers, nutritionists, microbiologists), veterinary officers in charge of communicable disease control and officers from the fields of education and training (both medical and veterinary) as well as from the field of sanitation (sanitary engineer and sanitarians).

In addition, a representative from UNICEF and an observer from US AID, and twenty-one observers from Pakistan attended. A complete list of participants, observers and representatives is given in Annex I.

The WHO/FAO Secretariat consisted of Dr M Kaplan, Chief, Veterinary Public Health, WHO HQ; Dr E.A. Eichhorn, Chief, Animal Health Branch, FAO HQ, Rome; Dr M. Abdussalam, Medical Officer, Veterinary Public Health Unit, WHO HQ; Dr H. Hussein, Regional Adviser on Health Laboratory Services. Two FAO Consultants, Professor A. Jepsen, Royal Veterinary and Agricultural College, Copenhagen, Denmark and Dr J. H. Steele, Chief, Veterinary Public Health, Communicable Disease Centre, Atlanta, Georgia, USA were engaged to act as discussion leaders to the Seminar. Dr A. Hamami, Public Health Administrator (Communicable Diseases), WHO EMRO, was Secretary of the Seminar.

A National Preparatory Committee was formed to cooperate with WHO in the arrangements to be made in Lahore during the preparatory phase of the Seminar. The Committee was headed by Dr Amir Muhammad Khan; members of the Committee were Professor Awan and Mr Alvi.

(b) Agenda

A provisional agenda and programme of the Seminar were circulated to participants and observers well in advance of the Seminar. These are shown in Annexes II and III, respectively.

In order to collect information regarding food hygiene, zoonoses control and veterinary public health practices and legislation in the countries of the Region, a questionnaire was sent to all participating countries. On the basis of the answers received to this questionnaire, which is reproduced as Annex V, a document was prepared by EMRO and distributed.

(c) Election of officers

Dr M.M. Sarwar, Director, West Pakistan Veterinary Research Institute, Lahore, was elected Chairman of the Seminar; Dr E. Ardalan, Dean of the Veterinary Faculty, Teheran, and Mr M.F. Hallab, Chief, Sanitary Engineering Service, Beirut, as Vice-Chairmen; and Dr A.E.A. Hafiz Abdu, Assistant Professor, Chief, Veterinary Public Health Department, High Institute of Public Health, Alexandria, as Rapporteur

(d) Documentation

WHO and FAO consultants and staff prepared, well in advance of the Seminar, documents on all major fields to be discussed. In addition, participants contributed papers on certain specific problems prevalent in their countries which had been investigated.

Altogether thirty-nine working papers formed the basis of discussions.

Background documentation from WHO and FAO Expert Committees, seminars and meetings were distributed during the Seminar.

A list of documents and background material is reproduced as Annex IV.

(e) Location and working hours

The first part of the Seminar was held in Lahore, Pakistan, from 29 October to 6 November 1964 at the Park Luxury Hotel.

The Seminar met from 9.00 a.m. to 1.00 p.m. and from 3.30 p.m. to 6.00 p.m. daily with the exception of Sunday and the days allotted to field trips

The second part of the Seminar consisted of field trips in and around Teheran, Iran, from 7 to 11 November 1964. The closing session was held at the Veterinary College of the University of Teheran

The English language was used exclusively during the Seminar.

2 OPENING CEREMONY

The Opening Ceremony was held at the King Edward Medical College on Thursday, 29 October, at 10 a.m.

The Director-General of Health and Joint Secretary to the Government of Pakistan welcomed the participants and wished them successful deliberations.

Owing to the inability of H.E. The Central Minister of Health to attend the Opening Ceremony, Mr Hashem Raza, secretary to H.E. The Minister of Health, delivered the Minister's speech.

Dr Taba, Director, WHO Eastern Mediterranean Region, thanked the Government of Pakistan for its kind invitation to hold this Seminar in Lahore and for all the facilities extended. He also thanked the Government of Iran for arranging field visits for the Seminar.

Dr Eichhorn, representing the Director-General, FAO, wished the Seminar every success and stressed the importance of the collaboration between WHO and FAO in such meetings

The Secretary of Health, West Pakistan, addressing the Meeting, wished participants a pleasant and profitable stay.

Participants convened at 12.30 noon at the site of the Seminar.

3. FIELD VISITS

Field visits were paid to the following places.

(a) Pakistan

- i) West Pakistan Agricultural University, Lyallpur
- ii) College of Animal Husbandry, Lahore
- iii) West Pakistan Veterinary Research Institute, Lahore
- iv) Schazoo Drug Laboratories, Lahore.

(b) Iran

- i) Veterinary College, Teheran
- ii) Institute of Parasitology, Tropical Medicine and Hygiene, University of Teheran
- iii) Pasteur Institute, Teheran
- iv) Razi Institute of Sera and Vaccines, Hessarek
- v) College of Agriculture, Hessarek
- vi) Municipal Abattoir, Teheran
- vii) Milk Plant, Teheran
- viii) Meat Plant, Teheran.

4. SOCIAL ACTIVITIES

Several receptions were offered to members of the Seminar by the Governments of Pakistan and Iran. These, besides the sightseeing

trips arranged, gave participants an excellent opportunity to become acquainted with Pakistani and Iranian culture. The various activities of the Seminar were well covered by the local press both in Pakistan and Iran.

5 CLOSING CEREMONY

The closing ceremony took place at the Veterinary College, University of Teheran, Iran, on 11 November 1964 at 9.00 a.m. A review of the Seminar was presented by the Rapporteur.

In his closing speech the Chairman extended grateful thanks to the Governments of Pakistan and Iran for their kind assistance and hospitality, to WHO and FAO, to the Colleges, Institutes and establishments visited during field trips, as well as to all those who contributed to the success of the Seminar.

6. EVALUATION

At the end of the Seminar, participants were requested to give their appraisal of the Seminar on forms especially designed for this purpose. (Annex VI.)

PART II

SUMMARIES OF DISCUSSIONS

First Plenary Session, Thursday morning, 29 October 1964

INTER-RELATIONSHIPS OF HUMAN AND ANIMAL HEALTH AND DISEASE

Animal diseases threaten man's health and well-being in many ways; the struggle of infectious diseases of lower forms of life to adapt themselves to more highly developed hosts is unending. Progress in the control of specific human diseases, such as smallpox, diphtheria, cholera, typhus and syphilis has allowed more attention to be given to animal disease problems which affect human health. The elimination of plague from the urban areas of the world has removed probably the most important animal disease threat to man.

There are more than 200 animal diseases that are infectious or communicable, out of which, and according to existing evidence, more than 100 are transmissible to man under certain conditions. These include infections caused by viruses, rickettsiae, bacteria, fungi, protozoa, helminths and arthropods. Prototypes of the various zoonoses that are direct threats to man's health as well as those that limit his advancement and development economically were reviewed.

Encephalitis included some newly identified arthropod-borne infections of which 75 of the 150 known viruses cause disease. Vesicular stomatitis (Indiana type) is of unusual interest because the virus is found in rodents and insects in tropical America, and

is the cause of human disease in Brazil, Panama and the United States. Bovine tuberculosis is a basic public health problem that continues to affect thousands of animals and persons in the Eastern Mediterranean Region as well as in other regions. One of the unusual developments in recent years is the discovery of many new Mycobacteria that may live free in nature (types I, II, III, IV, Runyon) and cause sensitization and even disease in man and animals. This has caused much confusion in several countries. Brucellosis is one of the most important zoonoses in the Middle East.

The chronic diseases of animals are of less direct influence on man's health status, but indirectly they may play a role in solving health problems that forestall the fulfilment of the general definition of health.

Investigation on heart diseases in animals revealed that they frequently have similar conditions to those in man. In swine, atherosclerosis appears to be common, while dogs suffer from congestive heart failure and arteriosclerosis. Cancer is likewise an important cause of disease in animals, including fowl. All these offer unusual opportunities for comparative disease studies.

Veterinary medicine undertakes investigations in other chronic diseases in such diverse fields as animal psychology, embryology, aging, blindness, neurology, radiology and nutrition.

A strong relationship exists between medical officers and veterinarians because of their mutual background and interests, the basic discipline of medical and veterinary students being quite similar, and a close cooperation between physicians and veterinarians is necessary, especially in the fields of zoonoses, diarrhoeal

diseases and food hygiene. Control of zoonoses is a major activity in veterinary public health as zoonotic diseases are a source of much ill health to man, as well as of large economic losses to agriculture and trade. Experience has shown that these diseases, by their very nature, cannot be fought adequately by the separate endeavours of health or agricultural authorities.

The teaching and training of veterinarians in public health is very important in order that they may contribute fully, along with the other health personnel, to the general public health services. Public health veterinarians can contribute in research work on epidemiology, laboratory investigations, and in the control of communicable diseases, food hygiene and public health administration.

The prevention and elimination of zoonoses in man depend in part on the control of specific major zoonoses, and the continued vigilance for the detection of new zoonoses.

There is much controversy on the possibility of foot and mouth disease causing human infections. Human cases of foot and mouth disease following the drinking of milk from infected animals were reported. Recently a human case in the United Arab Republic proved serologically to be foot and mouth disease group O. Reference was made to the confusion in the interpretation of tuberculin positive cattle due to the presence of open human cases which contaminate the environment, as reported in Denmark.

Further cooperation between agriculture and health authorities in the reporting of disease is important.

Veterinary medicine can make valuable contributions in genetics, population control and drug evaluation.

First Plenary Session, Thursday afternoon, 29 October 1964

SALMONELLOSIS AND ITS CONTROL

The animal reservoir as the primary source of food-borne salmonellosis in man (not including typhoid and paratyphoid fever) is important. There seems to be no simple solution to the problem of salmonellosis due to the difficulty of eliminating the infection from its persistent reservoirs in animals. However, the incidence of infection may be reduced within certain groups of domestic animals by applying improved methods of management, including protection of the animals against foodstuffs and drinking water contaminated with salmonellae. Another line of attack would be the implementation of food hygiene programmes aiming at the prevention of faecal contamination of foods at any stage of production, storage, processing and distribution, whether by direct or indirect contact. Finally there is the technological approach utilizing methods of treatment which will either destroy the organisms when present or at least prevent multiplication and thus keep a possible low level initial contamination below the minimum infective dose.

In the Middle Eastern countries, there seems to be a high incidence of salmonella infection, but traditional cooking habits such as thorough cooking of food and its immediate consumption after cooking protect the population to a large extent from salmonellosis and other food-borne infections. A change in such habits would become a matter of concern wherever modern food industries would try to introduce new types of food with which the people are not familiar. Refrigeration and pasteurization of liquid egg product and milk are examples of industrial technological solutions.

Although the animal reservoir is of primary importance, the problem of human carriers particularly among hospital staff which may be the cause of persistence of infection in the environment of the hospital is not to be overlooked. Hospital kitchens should only use pasteurized liquid eggs for uncooked egg dishes. Salmonellae in pet foods, as well as in cake mixes containing eggs, is frequently found. Some attributed the Aberdeen outbreak of typhoid fever to canned meat. Therefore, only potable water should be used for cooling cans after their removal from autoclaves.

In Ankara, salmonellae had been demonstrated in about 25% of samples of mayonnaise, all of which showed pH value of 5.0 or above. The use of lemon juice (citric acid) in sufficient quantity to adjust the pH value to about 4.0 or vinegar (acetic acid) had been found effective in destroying salmonellae in liquid egg yolk. The product should be kept for three days at 15°C to enhance the killing effect.

Investigation of acute gastro-enteritis in children in Pakistan showed that salmonellae were only found in rare cases both in Lahore and Karachi. The sale of meat from salmonella-infected animals for human consumption in areas where meat is scarce and where thorough cooking is a traditional habit which offers a fair degree of protection, is a practice in some countries. However, such meat should be sterilized before distribution. Human faecal excreta should never be used directly as fertilizer for vegetable or other edible field crops. Water sanitation and prevention of pollution of surface water are the most important factors in the prevention of salmonella infection.

Ante-mortem inspection is a good means for detecting salmonella in animals before slaughtering. Large slaughter houses should at least have facilities for bacteriological examination of emergency slaughtered cases, besides holding pens for ante-mortem inspection. Health education for food-handling personnel is an important part of any prophylactic programme for the control of food-borne salmonellosis. Fluorescent antibody techniques for detecting small numbers of salmonellae in foods is only applicable in highly specialized laboratories. The joint WHO/FAO Codex Alimentarius Committee has set up standards for salmonella in food and WHO has developed a system of salmonellosis reporting in the world.

Second Plenary Session, Friday morning, 30 October 1964

BRUCELLOSIS AND ITS CONTROL

Brucellosis is a zoonoses of major importance in the Region. Over four thousand human cases are reported from three principal foci of the disease in Iran, but the actual incidence of the disease is probably much higher. In other countries, fewer cases are reported.

Among animals the infection has been found in sheep and goats, as well as in cattle; however, the distribution of the infection is patchy. For example, infection has not been detected in goats slaughtered in Baghdad or in small desert goats used for the production of rinderpest vaccine in Pakistan. Nevertheless, the infection occurs in other types of goats and sheep in these countries. In Indo-Pakistan the incidence is much higher in high rainfall areas than in the arid regions. The two species of *Brucella* identified are *Br. melitensis* and *Br. abortus*.

One of the principal routes of human infection is oral, milk and milk products being the vehicles. Soft cheese consumed fresh appears to be the principal source of infection. In some areas infection in infants (possibly contracted from goat's milk) has been found. Environmental infection occurs in people sharing habitations with animals or in occupationally exposed persons. In some areas, persons not in direct contact with animals become infected through milk and other animal products.

Human vaccination with strain 19-BA is being tried in Iran where sheep and goat vaccination with Rev. I strain is also being undertaken. However, it is too early to judge the effects of these measures.

Bovine brucellosis is prevalent and its importance has been largely assessed in organized dairies and Government-owned herds. Abortions, sterility and loss of milk are responsible for major losses. Strain 19 vaccine has been used in some countries of the Region.

Further work should utilize the improved methods of characterization of strains and epidemiological investigation. There is need for extended use of human as well as animal vaccines.

Brucella can live for months in soft cheese depending on the way it is made; therefore such cheese should only be made from pasteurized milk. Ticks may play a role in the transmission of brucellosis. Due to the difficulty of serological identification, a centre should be established in the area in order to try to solve this problem. The Russian experience in vaccination showed that it does not seem to solve the problem in cattle. On the other hand, when sheep are vaccinated twice a year, good results are obtained.

However, this does not seem to be practical due to the large number of sheep, the cost of production of the vaccine and manpower for the execution of vaccination.

Human vaccination seems to be reasonably successful although reactions occur. Very rare cases of Br. melitensis in man occur in spite of their close association with infected animals. Although such people may have some sort of natural immunity, this cannot be relied upon.

Abortion following vaccination of pregnant animals seems to be a problem in the Sudan but it was doubtful whether it is due to the vaccine or to other organisms. Repeated vaccination of animals does not seem to be of much benefit.

Data from Iraq show the percentage of reactions in sheep and goats to be about 2%. The incidence in Pakistan is also very low, although in some places it is as high as 60-70% in cattle. This peculiar distribution does not seem to be clear.

Direct contact between animal and man seems to be responsible for 50% of the human cases while the rest is due to the consumption of infected milk and milk products.

ANTHRAX

Anthrax organism and related anthracoid organisms such as B. cereus, subtilis, etc. may be confused with B. anthracis. Various types of vaccines have been produced, including the original Pasteur types, to the present attenuated, non-encapsulated type (Sterne). In humans who are occupationally exposed immunization through an "agressive type" or Sterne type are utilized in the United Kingdom and USSR.

A classical example of the necessity for physicians to be aware of the possibility of anthrax infection is the outbreak which recently occurred in Kenya among humans infected by a cow. The original diagnosis was in one instance bubonic plague and in a second instance cellulitis.

Reports on conditions within various countries show that:

In Lebanon. Several highly suspicious human cases were found in the Bekaa Valley but no concrete diagnosis could be made. Lately 35 cases showed symptoms; all cases except one died in spite of antibiotic treatment. B. anthracis was isolated from their blood. Only a few cases among nomads who eat raw infected meat have been reported. No more human cases have been reported since the use of vaccination in sheep and goats.

In Iran. The disease is a major public health problem, the number of cases in 1963 being 15 000. Vaccination alone does not seem to be the solution for this problem.

In the Syrian Arab Republic. The disease is found in animals but so far no human cases have been reported.

In Iraq. The disease is quite prevalent in animals. It is believed that women engaged in scouring and dyeing wool develop some sort of immunity.

In the United Arab Republic: The disease is found in animals in certain provinces, "Anthrax District", but with no outbreaks. Human cases seem to be rare.

In Pakistan Anthrax has a peculiar distribution. In Indo-Pakistan it follows the 21^o isotherm. In West Pakistan anthrax

is found in the dry northern areas but not in the wet south.
Prior to irrigation, anthrax was found everywhere.

Climatic conditions seem to have some influence on the development of anthrax areas in relation to spore formation. Mechanical transmission can be effected by vultures depositing spores through their digestive tract in water points, or through the furs of wild animals, washing in water after having eaten infected carcasses. While sporulation is the key factor in the maintenance and spread of anthrax, vegetative forms can also cause disease.

However, in general, human cases are infected by animals slaughtered in extremis or by utilizing meat of diseased dead animals.

Antibiotics such as penicillin, tetracycline, etc. are of great efficacy in the treatment of anthrax.

Third Plenary Session, Saturday morning, 31 October 1964

EPIDEMIOLOGY AND CONTROL OF LEPTOSPIROSIS

Leptospirosis is a widespread infection caused by the various serotypes of Leptospira icterohaemorrhagiae of which 85 are recognized. Sometimes water leptospire (L. biflexa) are found in human and animal tissues but do not appear to cause disease.

In this Region, systematic surveys have not been undertaken, but the few local investigations have revealed the presence of the infection in countries such as Iran, Sudan and the United Arab Republic. Therefore, further investigation is needed to assess the importance of this infection.

For diagnosis, the microscopic agglutination test is still the standard procedure. For screening, the plate or slide agglutination tests may be employed. The fluorescent antibody tests need further refinement.

Among the animal reservoirs, rodents and insectivora are important and along with domestic animals constitute important sources of human infection. However, large ruminants (deer) and bats have been found to be carriers in certain areas. Human infection takes place through contact principally with infected urine, polluted water or soil. Among butchers, veterinarians and laboratory workers contact with infected tissues, etc. may be a source of infection. Infection is believed to take place through abraded skin and mucous membranes but the possibility of penetration through unbroken skin is not ruled out.

Vaccination with formalin inactivated leptospirens can be effected in occupationally exposed persons and animals. In the former, severe reactions sometimes occur because of the presence of animal serum in the culture media employed in vaccine production. In animals a shedder state may result which cannot be stopped with antibiotic therapy.

Because of the numerous serotypes and sub-serotypes of L. icterohaemorrhagiae difficulties in the diagnosis of specific infection are encountered.

Wild animals play an important role in the transmission of the disease. The disease was considered to be a major problem in swine raising and was considered as a venereal disease. Leptospirens have an ability to penetrate the skin. It was noticed that in the USA

people who stood in polluted water hardly caught the infection while the majority of those who jumped in the water were infected. However, standing in the water for a long period, e.g., ricemen, paves the way to infection, while the presence of abrasions on the skin facilitates penetration. Animals excreting virulent leptospire without showing symptoms are considered to be the main danger for the spread of the infection.

Leptospira organisms are sometimes present in cows' milk and they can survive for a long time in food.

Limited experiments for the treatment of leptospirosis have been carried out on the use of hyper-immune serum which, however, does not seem to be of much use.

Reported incidence of leptospirosis

In Iran: The infection occurs in man and animals.

In Lebanon: The few surveys that have been carried out have not revealed any foci of infection except for imported L. icterohaemorrhagiae infection in rats in the port towns.

In Sudan: Leptospirosis is sporadic. L. canicola infection has been found in man as well as in dogs.

In the United Arab Republic: Incidence of the disease seems to be controversial.

L. icterohaemorrhagiae has been isolated from rodents. Serological diagnosis proved the presence of antibodies in the blood sera of rodents, domestic animals and human beings.

Human infection is rare or absent. Apparently some environmental factors, e.g., soil, water, etc., seem to be unsuitable for the survival of leptospire.

Fourth Plenary Session, Monday morning, 2 November 1964

EPIDEMIOLOGY OF FOOD-BORNE DISEASES

Food poisoning is a generic term for gastro-enteritis of abrupt evolution or sudden onset, which by common practice has been applied to certain illnesses, usually enteric in nature and acquired through consumption of food. The term also applies to food intoxication due to chemical contaminants such as heavy metals, lead, cadmium, arsenic, fluorides, toxins elaborated by bacterial growth, staphylococcal, botulinus and welchii or perfringens toxins, and to a variety of organic substances that may occur in natural foods such as certain mushrooms, mussels, eels and sea foods.

By long tradition acute salmonellosis has been commonly connected with food poisoning although it is more an acute enteric infection than an intoxication. Many other acute infections may occasionally be spread through food, especially milk. They include typhoid fever, shigellosis, streptococcus sore throat, diphtheria, brucellosis, infectious hepatitis, poliomyelitis and other entero-viruses, amoebiasis, trichinosis, tapeworms, flukes and other parasites. These examples do not include all the possible situations where food may be a vehicle of the infectious agent, nor should they be described as food poisonings, but rather infections.

Food-borne infections and intoxications are usually recognized by the sudden occurrence of cases within a short time among individuals who have eaten one or more foods in common. The diagnosis is usually indicated by the following epidemiological findings:

1. Staphylococcal intoxications cause vomiting and diarrhoea within a few hours.

2. Salmonella infections cause diarrhoea of varying intensity in six to twelve and up to thirty-six hours. Sometimes vomiting occurs.
3. Streptococcus sore throat is of longer incubation - usually 18 to 72 hours.
4. Shigella causes acute diarrhoea. Vomiting is seldom observed, except in children.
5. Typhoid fever is self-evident, with high temperature, vomiting and diarrhoea and an incubation period of 5 to 7 days.
6. Infectious hepatitis will vary in its symptomatology. Some patients will become jaundiced, while others remain non-icteric. Constipation and bloat are common symptoms. Incubation period: 3 to 4 weeks.
7. Clostridial infections and intoxications vary considerably.
 - a) Botulism - sudden onset, vomiting usually absent - diarrhoea varies - sudden collapse and eye signs are almost pathognomic.
 - b) Welchii or perfringens are difficult to diagnose and can imitate all types of food infections except botulism.
8. Chemical poisonings are usually diagnosed by the patient's medical history and the physical findings in the environment.
9. Vegetable food poisonings caused by mycotoxins including ergotism are special problems that can only be revealed by epidemiological findings.

10. Sea food poisonings caused by mussels, abalone, eels, clams, oysters and certain fish are again only revealed by investigation.

The term "food poisoning" should therefore be dropped from the concept of food infections and intoxications. In the various procedures in epidemic investigations, the data sometimes are quite clear in revealing the offending foods; at other times statistical analysis is necessary while in some cases no answer is forthcoming. Intensive investigations of all food-borne outbreaks are needed.

Amongst the different types of food poisoning in the Region, staphylococcus toxin intoxications are thought to be the most common food-borne diseases. Cut water melon can be a medium for the transmission of staphylococcus which may be found under the finger-nails of some food handlers.

Salmonella infection is believed to be high but little is known in this regard; botulism is not recorded; typhoid fever is sporadic but not uncommon. Brucellosis is common, especially in cheese and milk products, while the incidence of chemical, vegetable and sea food poisoning is unknown. Parasitic infections are common. Aflatoxin was also to be included in the group of food poisoning. Some cases are due to the accidental use of insecticides or to their residues in fruits. Environmental sanitation can play an effective role in the control of such infections and intoxications.

Except for typhoid fever no vaccines against these diseases are available or of value. Staphylococcus toxoids do not appear to be of value in man except under experimental conditions.

The epidemiology and reporting of food-borne infection should be given priority by all health services. The establishment of a central office where all data would be received would be an important step in solving the various food-borne disease problems.

Meat-borne diseases

Meat hygiene and meat control serve a broader purpose than merely that of preventing meat-borne diseases. This applies to other branches of food control as well. The purpose of maintaining public food control services, along with other developments, is to offer a special contribution to secure progress and development in food production as a whole. The use of the special knowledge of hygiene, pathology, food control and technology will increase the gains and benefits derived from increased production of food which will not then be jeopardized due to waste, spoilage, increased food risks and other ill effects of faulty operations and unsatisfactory conditions of food handling. In this way the work of FAO fits in with that of WHO.

Meat hygiene, accordingly, should be concerned not only with the prevention of meat-borne diseases but also with all aspects of meat quality affecting the edibility and consumers' acceptance of the product.

The following characteristics determine the hygienic quality of meat.

1. Pathological conditions in the slaughter animals.
2. Bacteriological characteristics (pre-slaughter infections and post-slaughter contamination).
3. Chemical and physical characteristics; final stability of fats; residues of insecticides or antibiotics, etc.

Meat hygiene services should not be limited only to the inspection of carcasses but should also include the supervision of the sanitary environmental conditions in the slaughter house and elsewhere (transportation, storage, manufacturing, retail distribution).

There is no justification for using oestrogens for fattening poultry that would counterbalance the public health risks due to the consumers' exposure to infection.

Meat, treated with antibiotics plus radionucleoids for the purpose of preservation, is not considered an important source of radionucleoids, although milk is. However, tolerance levels are being established by a United Nations Committee. Due to the apparent shortage of meat in many countries, the use of antibiotics in meat preservation may be accepted as a temporary measure. On the other hand, the Meat Hygiene Committee had condemned the use of antibiotics for the preservation of fish and poultry. It was stated that sensitization has been reported so far only from penicillin, not from tetracyclines. These are easily destroyed in foods by heating.

Meat consumed in some countries of the Region is thoroughly cooked, and this is an important factor. On the other hand, the rather high incidence of Taenia saginata, a parasite that can only infect man through insufficiently cooked beef, proves that the habit of eating only cooked meat is not universal in the Region.

Clean operations should be segregated from unclean in slaughter houses to prevent contamination.

Fourth Plenary Session, Monday afternoon, 2 November 1964

PROCESSED FOOD AND ANIMAL BY-PRODUCTS

There is a need for establishing hygienic bacteriological laboratory control of prepared foods along with the development of food industries setting up mass production of prepared foods, especially within the large urban areas.

Useful and correct interpretation of results obtained from examinations requires that food bacteriologists working in this field should have a sound knowledge of the natural microbiological characteristics of each type of product and of the composition and the normal procedures of manufacture as far as these factors affect the microbiological status of the product.

Prepared foods are conveniently divided into four categories, each one requiring its special techniques of examination, and are to be judged by specific standards. The four categories are:

High-temperature heat-treated, hermetically packed products

Low-temperature heat-treated, hermetically packed products

Low-temperature heat-treated, non-hermetically packed products (cooked or baked)

Non-heated, salted or chemically preserved products.

It is not advisable to introduce legal standards but to use advisory standards, to be adjusted to local conditions. It is necessary to apply standardized methods of examination.*

* A number of slides giving examples of advisory microbiological food standards and some statistics on Cysticercus bovis and its distribution in carcasses and on the incidence of milk-borne diseases as affected by pasteurization were projected.

Food standards determined by the Codex Alimentaris Committee are especially useful in the international food trade. Laboratory examination of foods in certain areas should concentrate upon checking foods for pathogens, leaving the question of regular standards until further development. The limited laboratory facilities should be used for such purposes as deserve highest priority.

Techniques of sampling and the proper sample for the control of imported foods are available in probability tables which show the number of units that should be examined to detect deficient units within specified ranges of probability. Such tables, however, are applicable only for control in canning plants, and are too laborious for food control practices. Ten samples from each consignment, regardless of size, are sufficient for examination. Attempts to detect highly infected carcasses with C. bovis cysts by using serological or skin tests have failed so far.

Thorough meat inspection, rural sanitation and proper sewage disposal are the reliable means for combating tapeworm infections. This, however, presents great difficulties in practical application, as no methods of sewage purification will free effluents from tapeworm or nematode eggs.

The maximum contribution that meat inspection can make in combating taeniasis is that every carcass showing live cysts, regardless of size or numbers, be subjected to freezing before being released for human consumption. Even when only one cyst is detected, this is a case of cysticercosis and the chances are that the meat actually contains a number of cysts. Whenever large new

slaughter houses are being constructed a freezer unit for holding carcasses with cysts should be provided. This would save much usable meat and at the same time assist in combating taeniasis.

The accepted percentage of blower cans in a consignment of canned foods which could be accepted as normal is less than one per cent.

Fifth Plenary Session, Tuesday morning, 3 November 1964

MILK-BORNE DISEASES AND INFECTIONS

The difference in the epidemiological pattern between the sporadic non-epidemic and the acute epidemic type of milk-borne infections is that the first is due to permanent exposure of the milk supply to the source of infection (for instance, brucellosis and tuberculosis in animal herds), and the second results from an intermittent exposure of brief duration.

A satisfactory scheme of control cannot be dependent upon pasteurization or sterilization alone but must comprise

1. Disease control and control of hygiene on the farm to protect the raw milk supply.
2. Efficient methods of heat-treatment.
3. Control of hygiene in dairy plants to protect the pasteurized or otherwise heated milk against recontamination.

The disappearance of the classic pattern of diseases seen in the epidemiology of milk-borne diseases in developing countries is due to the difference in the group populations. Bacterial diseases are overcome by pasteurization, but viruses may resist pasteurization. Sterilization of milk is now used in developing countries.

Regarding the effect of sterilization on the nutritional value of milk, there is no scientific proof that pasteurized or even sterilized milk is inferior to raw milk as a food. Admittedly part of vitamin C would be lost, but milk is not the sole source of vitamin C in the human diet. There is no comparison between the small loss which may result from heating the milk and the great advantages gained in safety for the milk supply. Sterilization of milk is recommended for the majority of the countries in the Region. However, there is no use in introducing pasteurization systems into countries that are not prepared for them. Not even sterilization would solve the whole problem. Any milk scheme must go together with milk hygiene programmes.

Sterilized milk is an excellent food for children.

There are two systems of sterilization:

1. Sterilization after bottling.
2. In-flow sterilization followed by bottling.

The second system has the advantage of requiring less severe heat-treatment but very good operational standards are required to carry out bottling without risks of recontamination.

In the sterilization after bottling technique, the raw milk must be suitable for sterilization. Actually there is a precarious balance between the temperatures of sterilization which can be applied without severe loss in milk quality and those which are needed to reach a satisfactory degree of sterility.

The last International Dairy Congress reported some growth-inhibiting factor interfering with the growth of young

animals. Such factors develop from the influence of high temperatures upon milk proteins. Whether these reports are relevant to the use of sterilized milk for humans must not be taken for granted.

Sour milk products are much safer than ordinary milk and should be further investigated. They might be a very practical and useful supplement to other forms of milk, especially when economy is taken into consideration.

Pasteurized milk is generally safe but does not exclude great risks of post-pasteurization contamination under certain existing conditions. The cardboard containers or milk bags are to be preferred to milk bottles which could be easily opened and thus allow adulteration.

The cost of pasteurized milk should be kept at a level accessible to the population.

The situation with regard to pasteurized milk in some countries of the Region is as follows:

In Cyprus. Tuberculosis and brucellosis are not problems. Measures to improve hygiene on the farms for the supply of safe milk have been applied with some success. Only two small private pasteurization plants are operating.

In Ethiopia: A UNICEF plant is in operation but it seems that the cost of pasteurized milk is high.

In Iran: Several pasteurization plants are in operation. In Teheran 120 tons of pasteurized milk are produced daily. In hot areas of Iran sterilization plants are now being planned.

In Iraq. Pasteurized milk is sold with only a slight increase over the price of raw milk. Pasteurized milk constitutes 30% of the milk marketed in Baghdad.

In Lebanon. Pasteurization of milk does not seem to have met with great success. Some people prefer the use of imported powdered milk to fluid milk.

In Pakistan. People prefer boiled milk, but some pasteurized milk is sold in large cities. Powdered milk may solve the problem of the shortage of milk as it can be easily distributed in the remote areas.

In Sudan. Milk pasteurization plants will soon be operating.

In the Syrian Arab Republic Plans are existing for pasteurization and sterilization plants with the assistance of UNICEF.

In the United Arab Republic: Several milk pasteurization plants are in operation. However, only a section of the population can afford pasteurized milk.

A condition in pasteurization schemes is that refrigeration during retail distribution and in consumers' homes be available, otherwise sterilization schemes are preferred. Whatever system is chosen, the raw milk for processing must be a good quality milk. Reconstituted powder milk, recombined or toned milk should be considered as a good alternative, which deserves careful study.

Fifth Plenary Session, Tuesday afternoon, 3 November 1964

ORGANIZATION AND ADMINISTRATION OF FOOD HYGIENE (REPORTING,
LEGISLATION, INVESTIGATION OF FOOD POISONING OUTBREAKS)

In food hygiene two points are to be considered.

1. Local demand based on epidemiological findings.
2. Importing countries requiring high standards of inspection.

An example of the former is the identification in the late nineteenth century of milk-borne diseases, such as streptococcus sore throat, diphtheria and tuberculosis. This led the community to demand milk inspection programmes, which in many states or countries was the beginning of local health services. Veterinarians were the first sanitarians to carry out these programmes. Later, state and national programmes grew out of these local programmes. Here was the beginning of national tuberculosis control in animals and man. Later, pasteurization ensured the safety of all milk products. Nearly all these programmes were administered by health authorities, although in some cases other services, such as agriculture, livestock sanitation and interior, also participated.

Meat inspection also began as a local consumer demand but later grew into state and national services. The demand of importing countries that high standards be maintained had a far-reaching effect throughout the world. In 1890 the US Department of Agriculture inaugurated an inspection service for the export of meat products and was eventually extended to all products moving in interstate commerce. Most exporting countries have similar services.

Countries now developing meat industries must follow high standards to meet the requirements of the importer. Most meat inspection services are administered by agriculture or veterinary services so as to ensure continuity of inspection from the farm to the packing centre.

Fish inspection has been a veterinary operation in most countries. The principal problem in fish hygiene is both plant and water sanitation. There are few diseases of fish, except fish tapeworm, of concern to veterinary public health officials. On the other hand, fish are subject to contamination with bacterial agents, such as Salmonella, Erysipelas and even leptospires. Fortunately, these bacterial contaminants are seldom the direct cause of disease in man but are commonly found in by-products such as fish meal or fish flour. Another problem in fish sanitation is that of botulism type E (see working paper No.EM/SEM.VPH/2), which is a dangerous situation in northern temperate zone countries (USA, USSR, Japan, Canada). Precautions should be taken so as not to provide optimal conditions for toxin production. Shell fish have been incriminated as vehicles of typhoid fever, salmonella infection, and hepatitis in man. This usually occurs in sewage-contaminated waters or in processing plants using contaminated water. Preventive measures are undertaken by various agencies including health, agriculture, fisheries and interior. Water sanitation control is important in any service or inspection programme.

The inspection of vegetables and fruits is an important service in any organized health service to ensure clean products, free from contamination. This should require washing before the products move to market or into international trade.

Sanitary inspection of processed foods requires constant improvement in plant and shop sanitation to ensure the wholesomeness of the products. Most large manufacturers have their own sanitary programmes reinforced by a good laboratory service.

Drug supervision falls in the general area of inspection services but has become so complex that only well organized national agencies can provide these technical services. The administration is usually by health authorities.

There is a trend towards placing all inspection services in one department organized for consumer protection, such as a department of urban affairs. This may have far-reaching effects.

A ready system of inspection is not practicable in every environment, owing to the vast differences between cities and rural areas. In the opinion of some, all the different functions dealing with this subject should be kept under one authority with assistance from other bodies when required.

The food hygiene administration in some countries of the Region and neighbouring countries is as follows:

In Iran Meat inspection is carried out by sanitarians with at least six months' training. They are given refresher courses of one month every year. The control is the responsibility of the Ministry of Interior with representatives from the Ministries of Health and of Agriculture.

In Jordan: The first stage of milk production is under the supervision of the Ministry of Agriculture, while the market milk is under the supervision of the Ministry of Health.

In Pakistan So far there is no uniform administrative pattern for milk and meat inspection. Ministries of health, agriculture and local governments are responsible at various places.

In Turkey: Food control has improved in the last two years. There are ten local laboratories for water and food analysis.

In the United Arab Republic The food hygiene policy comprises mainly the supervision of sanitation of food factories, medical and hygienic supervision of food handlers and food inspection and analysis. At present there are sixty-five laws dealing with the different foods. Moreover, a new law for drugs and foods is being prepared.

Milk control is a field that requires a multitude of functions, and post-graduate training in food hygiene for both medical and veterinary officers would be useful.

Sixth Plenary Session, Wednesday morning, 4 November 1964

RABIES: EPIDEMIOLOGY AND FIELD CONTROL PROGRAMMES

The importance of mechanical flushing of wounds was demonstrated from experimental evidence for the prevention of rabies in man. The Expert Committee on Rabies stressed the importance of booster doses of vaccine when serum had been used along with vaccine following exposure. It is important that all vaccines be tested adequately for potency according to well-established procedures described in the WHO Manual on Laboratory Techniques in Rabies.

Experiments on dogs and cats showed vaccines to be effective for over three years. While the Flury egg-adapted vaccine gave

good results experimentally, new tissue vaccines also gave excellent results. The epidemiological picture of rabies in North America is changing as wild life vectors such as skunks, foxes and bats are superseding dogs as reservoirs of the disease. Diagnostic procedures, especially the fluorescent antibody technique, are giving excellent results in the hands of competent workers.

In reviewing the world picture of rabies prevalence and the principal animal vectors involved, the different ecological conditions found in various parts of the world were described. Central Europe is known to be a focus of fox rabies, and rodents were recently found in Czechoslovakia to be infected under natural conditions. The borders of the Caspian Sea have wolf rabies, and in South-East Asia the pariah dog is the main reservoir. In the Middle East the jackal is a prominent carrier and in Africa south of the Sahara a variety of carriers, including the mongoose and the civet cat, act as wild hosts. The Caribbean area and Central America are plagued by vampire bat rabies. In the arctic region of the USSR the silver fox is an important source and such animals were sometimes found infected with the rabies virus without showing clinical signs. They were probably in the pre-clinical stage of infection. Thus rabies shows a variety of epizootiological pictures, and it is important to determine in each region which animals serve as principal reservoirs.*

Rabies is a disease quite prevalent in the Region. It was reported as a very serious problem in East Pakistan where no

* Films were then shown picturing human cases of rabies, and community action when an outbreak of rabies occurs.

concentrated anti-rabies measures existed. Reports from West Pakistan also showed the rabies problem to be acute with a continuous increase in the number of cases.

According to available data the prolongation of the incubation period of the disease in man due to the use of serum is in fact an advantage which helps the production of active immunity with the vaccine. It is important, however, to use booster doses when serum is given. The mechanical flushing of the wounds is a very important preventive measure. Plain soap and water proved to be very effective; however, if disinfectants are to be added they should not be destructive to the tissues. Cauterization is also effective but not acceptable because of pain and scarring.

Rabid ruminants are dangerous and the possibility of the virus contaminating the milk, although not reported, cannot be excluded. However, rabies by ingestion is extremely unlikely. Re-treatment of exposed persons is necessary, but the full course of treatment is unnecessarily provided; a potent vaccine is used in the first instance, followed by one or two booster doses. On the other hand, it is imperative that the courses given for treatment of persons bitten by suspected animals should be completed.

It is believed that rodents do not play an important part under natural conditions, even though rodents have been reported to be infected in nature in the Mediterranean basin, the USA and Czechoslovakia.

Among the various methods used for the diagnosis of rabies, it appears that fluorescent antibody techniques are now replacing Negri body examination.

Seventh Plenary Session, Thursday morning, 5 November 1964

PARASITIC ZOOSES

Several species of parasites of animals infect man in this Region. These include zoonoses of major importance such as hydatidosis, taeniasis, leishmaniasis and ectoparasitic infestations which are often implicated in the transmission of viral, bacterial or protozoal infections. Parasitic zoonoses would appear to be the most widespread group of zoonotic infections in the Region.

Cutaneous, as well as visceral, leishmaniasis occurs in several countries of the Region. In Iran two types, moist and dry cutaneous leishmaniasis, have been identified; the former (moist) type represents transmission of the infection from desert rodents. Of the visceral type the Indian type occurs in the eastern parts of the Region and a new focus has recently been discovered in West Pakistan. The infantile type with canines as reservoirs occurs in several countries but in the Sudan visceral infection with rodent reservoirs has been found.

Hydatidosis is of major importance in many countries including Cyprus, Iran, Iraq, Lebanon and in almost all other countries of the Region. Socio-cultural factors play an important part in determining human exposure, as in some communities dogs are avoided as unclean animals. However, environmental infection and pollution of vegetables, etc., consumed raw are frequent sources of infection. Certain occupational groups, such as leather workers, are infected rather frequently. Anti-helminthic treatment of dogs has failed to control the disease in some areas but there are indications that

it may be possible to immunize dogs, as well as herbivorous animals with activated embryos of echinococcus and other dog tapeworms. However, further systematic work is required on vaccinations as well as on anti-helminthics.

Taenia saginata infection is common in most countries of the Region, but T. solium is of minor importance. Cysticerci are commonly found in cattle in abattoirs and the cysts survive insufficient cooking. For more effective meat inspection, locally suited laws and procedures need to be developed. In some large abattoirs infected carcasses are kept at -10°C for ten days, but it is difficult to apply this procedure in rural areas and small abattoirs.

Trichostrongylosis is common in rural populations but does not appear to be accompanied with manifest disease. It is sometimes confused with hookworm infection.

Fascioliasis has been found only as a sporadic human infection, though it is quite common in ruminants. Trichinosis is almost non-existent in man, but it is possible that a wild-life cycle may exist.

Linguatula serrata is quite common in dogs throughout the Region. Its larvae occur in the viscera and lymph nodes of ruminants. In places where raw liver or lungs are eaten human infections with immature Linguatula may occur. It has been suspected that the acute pharyngitis in Lebanon and Syria (Halzoun) may be caused by this parasite.

In the epidemiology of leishmaniasis in Iran, besides man, the dog is the main reservoir of the dry type of cutaneous leishmaniasis

and desert rodents (Rhombomys epimus) were found to be the main reservoir of the moist type. The incidence of cutaneous leishmaniasis was greatly reduced after the application of DDT and other residual insecticides for anopheline control.

In schistosomiasis, occupation is an important factor in the transmission of this infection. Studies undertaken on the biology and ecology of Bulinus snails have revealed seasonal changes of snail density and relationship between the host and the parasite.

Tapeworm infections are of major public health importance in the Region. These include beef tapeworm (Taenia saginata), pork tapeworm (Taenia solium), dog tapeworm (Dipylidium caninum), and rat tapeworms (Hymenolepis nana, H. diminuta). Tapeworm infection is rather common, particularly among villagers where livestock is largely exposed to human faeces and where no meat inspection is practised. T. saginata is much the commoner of the two tapeworms; however, Cysticercus bovis and C. cellulosae seem to be common daily findings in local slaughter houses.

Although the control of these diseases depends on many factors, the application of veterinary public health practices can control these infections. While meat inspection is of great value in the control of animal tapeworms, rural sanitation and livestock management will also help to control many of these infections.

Hydatidosis is another important zoonotic problem whose geographical distribution depends on its incidence and distribution in the reservoir hosts, particularly sheep, cattle and camels. The incidence of human infection calls for three co-existing factors:

an extensive sheep raising district, the presence of a large dog population which has access to the offal of dead or slaughtered animals, and a standard of living and sanitation that permits a close association between dogs and human beings.

The disease develops in two cycles, the domestic and sylvatic. In the domestic cycle the dog is the main definitive host. In the sylvatic cycle wolves, foxes, jackals and wild animals can be infected with the worm and contaminate the areas in the desert where rodents are found and play the role of the intermediate hosts.

The first step in any control programme should be a proper epidemiological study of hydatidosis in man, livestock and dogs. The control programme depends mainly on eradication of canine infection (anti-helminthic treatment, stray dog elimination and reduction of wild canine population), prophylactic measures against canine reinfection, educational measures and legislation. The prophylaxis and control of hydatidosis should be governed by local as well as international regulations.

Available data showed that parasitic zoonoses, particularly cysticercosis and hydatidosis, are widespread in the Region. The carcasses of animals of less than two years having even one cyst dead or alive should be frozen. No cases of trichinosis were reported from countries in the Region.

A small localized epidemic of fascioliasis in man was recently discovered in northern Iran. Human cases of hydatidosis without association with dogs have been attributed to formites.

Reports from Pakistan showed visceral leishmaniasis to be common in the East and near the Chinese border.

Seventh Plenary Session, Thursday afternoon, 5 November 1964

TUBERCULOSIS AND OTHER ZONOSSES

Animal tuberculosis. The causal organisms, pathogenicity, methods of testing, various types of tuberculin and their preparation were reviewed. According to a preliminary report on work carried out in Kenya by an FAO expert, non-specific reactions are often apparently due to a psychrophilic strain of mycobacterium found in frogs. The animals lost their sensitivity when removed from areas adjacent to permanent waters. Breed resistance exists in African and Indian types of cattle and in certain human populations. As for the individual tissue resistance, in the guinea pig the kidney is rarely involved whereas in the rabbit it is common.

Hypersensitivity caused by M. tuberculosis and other organisms is different. Vaccines such as BCG are of relatively little value in animals and the drawbacks of perpetual sensitization for further testing are a major deterrent.

The test and slaughter method for control programmes in cattle are a logical approach since by this method countries such as the USA, the United Kingdom, Canada, Scandinavia, Holland and Switzerland have in effect nearly eradicated bovine tuberculosis.

While the retesting of all herds would be the ideal, it is impossible in some circumstances, as is the case in the USA (where the incidence has been reduced to less than 1/10 of 1%); the cost of locating individual reactors would be around \$250, which is often more than the value of the animal itself. The problem of reactions in tested herds and the possibility of human infection transmitted to animals, avian infection and/or non-specific sensitization is receiving

special consideration in the USA, where in some sections there is one hundred per cent (100%) reaction in children but no tuberculosis. Runyon of the University of Wales has classified a typical mycobacteriae into types 1, 2, 3 and 4. One is Pigmented, 2 non-pigmented, 3 (Battey) has avian characteristics and 4 is a very rapid grower, coming up in less than 15 days. Type 3 (Battey) occasionally causes clinical disease in man, with no antibiotic response. It has been associated with tuberculin reactions and mastitis in some southern states. The possibility exists of producing infection by the so-called typical types by pre-sensitization with the avian type.

There were 19-20 authenticated cases of the avian type transmitted to man, some of which might have been Battey organisms.

There is actually no difference in the pathogenicity of bovine tuberculosis in man, but man is more exposed to the human type than the bovine type. Children are more exposed by drinking milk with consequent digestive tract and glandular forms of tuberculosis. These may later generalize and develop secondary pulmonary bone or meningeal forms.

Most exposures to the tubercle bacillus result in a latent immunizing infection and avoid subsequent infection by the bovine type. With the reduction or elimination of the human type, the situation will reverse itself by exposure to bovine tuberculosis.

Arthropod-borne infections. There are almost 150 different recognized arthropod-borne viruses, of which 60 are known to produce disease in man or domestic animals. However, little is known about the epizootiology of these agents.

Arthropod-borne diseases are widely distributed throughout the Region, and they are especially important in both temperate and tropical countries. A number of arthropod-borne encephalitides such as African horse sickness, a dengue-like disease, etc., has lately been extending from the enzootic area in Africa, through the Eastern Mediterranean, to Pakistan and India. The problem of arbovirus infections is no doubt of great importance to the countries of this Region. Japanese B. encephelitis, Kyasanur Forest disease, haemorrhagic dengue fever and African horse sickness are arbovirus infections of importance, the first two being zoonoses. Studies on migratory birds and their parasites are being conducted to determine how this group of diseases was spread geographically. Domestic animals such as horses and swine can be important reservoirs of the disease.

These infections may potentially and actually affect man's health and agricultural economy. Development of improved diagnostic and reporting systems is needed. WHO has designated a number of laboratories in strategic locations throughout the world as regional laboratories for arthropod-borne virus diseases.

Animal influenza. Epidemiological studies have been carried out under the aegis of WHO to establish the relationships of human and animal influenza since the A2 pandemic in 1957. Of particular interest is the close relationship of the swine and human influenza strains. There is no doubt that influenza is inter-transmissible and produces clinical disease in both man and swine. Other animals have this specific influenza strain - duck, chicken, equine - that does not appear to cause disease in man, but a close picture of

their epidemiology will no doubt improve knowledge of human influenza epidemiology. During outbreaks, two blood specimens three weeks apart from affected animals should be obtained. Especially important is the isolation of influenza virus strains from animals.

Listeriosis. Cases of listeriosis in sheep and cattle were reported in Pakistan and India. Work carried out in Denmark showed that man and animals can be symptomless carriers. Difficulties are often encountered in the diagnosis of listeriosis. Listeria has been isolated from foxes suspected of having rabies in the USA. Various ticks play a role in the transmission of Q fever.

Eighth Plenary Session, Friday morning, 6 November 1964

NATIONAL, PROVINCIAL, MUNICIPAL AND RURAL ADMINISTRATION
AND PRACTICE OF VETERINARY PUBLIC HEALTH

The scope of veterinary public health is broader than that of zoonoses control comprising, for example, food hygiene, laboratory services and research, experimental and comparative medicine as well as the production of laboratory animals of high standards. Training veterinarians in public health is important. The aim of education in veterinary public health is to impart the necessary knowledge to enable veterinarians to contribute fully to the public health services along with medical and other personnel.

The demands of public health on the veterinary profession can be met only if the veterinarian has been suitably trained for work in this field.

Veterinary public health practices vary in different countries according to prevailing local conditions, and it is not possible to propose a set-up that would suit each of the countries in the Region.

In the USA veterinarians are participating in all medical activities and a veterinary section exists at all levels in the public health organizations. In this region it is suggested that at least one veterinary public health man should be in the ministry of health.

Veterinarians can play a role in communicable disease control, especially zoonoses, public health research and sanitation, particularly as it pertains to food products of animal origin. It is anticipated that under the influence of the new orientation of the veterinary medical curriculum a percentage of the graduates will be interested in public health as a career. The adequate training of specialized veterinarians both at undergraduate and post-graduate level is considered as a first requirement if effective operations are to be undertaken within a country.

The influence of contact with other professions interested in public health, with the opportunity for free interchange of ideas, is of inestimable value to the veterinarians.

The veterinary public health situation in some countries of the Region is as follows.

In Jordan: A veterinary department exists in the Ministry of Agriculture. This department deals with all the various veterinary problems as well as the production of some vaccines. No studies have been carried out to determine the present zoonotic diseases.

In Pakistan. There is no regular coordination in tackling the zoonotic problems between the public health and veterinary departments. Four modern slaughter houses will be established in the near future and will be in charge of veterinarians working in health departments.

In Cyprus: A veterinary public health section was established in 1964. So far it deals mainly with the problem of hydatidosis. Three veterinarians have been sent abroad for training in veterinary public health. Legislation is drafted by a committee formed by the director of the medical services, the director of the veterinary services and the representative of the Ministry of Interior. Although there is a shortage of veterinarians, the veterinary department greatly contributed to veterinary public health through the eradication of zoonoses such as tuberculosis and brucellosis.

In Iraq. There is no co-ordination with health services owing to the shortage of veterinarians. The control of the present infectious diseases is the main task of the veterinary profession. In the Ministry of Agriculture, there is a veterinary department including a section for slaughter house administration.

In Iran: The director of the veterinary services in the Ministry of Agriculture co-ordinates the various veterinary public health activities in the country. There is a shortage of adequately trained veterinary public health officers. Research in the field of zoonoses is carried out mainly at the Razi Institute, which has shown that tuberculosis, brucellosis, rabies, anthrax and hydatidosis are the main zoonotic problems. There are a number of milk pasteurization plants and a modern slaughter house has been erected in Teheran. The curricula in the veterinary faculties have been reviewed with more emphasis on specialization. Veterinarians are needed either as clinicians, or in the fields of animal husbandry, zoonoses and food hygiene. Meat inspection is a big problem in the rural areas. Laymen are trained for six months with a one-month refresher course each year in an attempt to solve this problem (300 are already trained). Moreover, a monthly journal dealing with the various meat inspection problems is freely distributed.

In Ethiopia. In the Ministry of Agriculture there is a veterinary department that deals with all veterinary activities. There is a shortage not only of veterinarians but also of other trained personnel. Hydatidosis and cysticercosis are widespread while the incidence and distribution of other zoonotic diseases, such as brucellosis, anthrax and bovine tuberculosis, are not well known.

In Tunisia: The veterinary services in the Ministry of Agriculture deal with all veterinary activities. The main problems in veterinary public health are the shortage of veterinarians, besides the lack of co-operation between the health department and the veterinary service.

In Lebanon. The Ministry of Agriculture is responsible for the veterinary services including inspection of slaughter houses. The important zoonoses are bovine tuberculosis, rabies and brucellosis, as well as taeniasis and hydatidosis.

In the Syrian Arab Republic: The directorate of animal health in the Ministry of Agriculture supervises and co-ordinates all work for animal disease control. There is no specific set-up for veterinary public health. A shortage of veterinarians, as well as a shortage of transport, exists. Rabies, bovine tuberculosis, brucellosis and anthrax are important zoonoses.

In the United Arab Republic There is a veterinary public health section in the Ministry of Agriculture with thirty veterinary public health officers. These veterinarians are all holders of MPH degrees and are all graduates of the veterinary public health department, High Institute of Public Health, Alexandria. In every province one officer is stationed. The Cairo office co-ordinates veterinary public health activities in the country.

In Turkey: There are two faculties of veterinary medicine. There is also a school of public health belonging to the Ministry of Health, with three sections: food control and environmental sanitation, zoonoses and laboratory sections. The school was mainly for medical students, but since two years ago veterinarians have been accepted for the DPH course.

In order to co-ordinate public health and veterinary activities in the countries of the Region, a veterinary public health division should be established in the ministries of public health. Details of administration can be adapted to conditions prevailing in the country.

Exchange of information between countries of the Region, through a veterinary public health newsletter containing all the various activities of food hygiene and zoonoses control in the Region, would be beneficial.

EMERGING ZOOSES

Domestic and wild animals may act as reservoirs for human infections. The introduction of infections from wild zoonotic foci into human beings through migratory birds or the various arthropods are examples. The group of arthropod-borne virus diseases still remain among the major economic and development problems in this Region, owing to the increasingly rapid traffic of man and animals. In the past ten years the list of the known agents in this group has expanded from about 30 to more than 150.

The struggle of the infectious diseases of lower forms of life to adapt themselves to more highly developed hosts is unending.

As these disease agents ensure their continued existence by adapting themselves to a broader host spectrum, they become a greater threat to man's well-being.

The host-parasite relationship is rather complex and there is need for more research to explore the many unknown facets of such relationships. Host-parasite relationships are continuously changing; therefore, it is to be expected that new zoonoses will emerge or that previously unrecognized inter-relationships will be uncovered. Considerable data exist on the susceptibility of some animals to human group A influenza virus, namely swine, horses and sheep, but there are no epidemiological data to indicate that they are a source of infection for man, except swine. Nevertheless, there may be an extra-human reservoir for influenza virus in nature, possibly in mammals, either domestic or sylvatic, or in birds.

The intimate co-existence of man and animals is an important factor in the interchange of an ever-increasing number of diseases. New hazards are to be expected due to the increased migration of peoples to hitherto unpopulated areas, as a result of the continuous increase in the population. It is obvious that the problem of emerging zoonoses needs continued investigations, requiring the collaboration of the different interested groups.

NEW HORIZONS IN VETERINARY PUBLIC HEALTH

The various fields in which veterinary public health can play an important role are numerous, such as food needs, food sanitation, infectious disease, comparative medical research, physical environment, environmental sanitation, blindness, neurological conditions, allergies, space medicine, laboratory animal medicine and socio-economic growth.

Food needs will double in the coming decades as the human population is expected to double in the next forty years. This will require enormous expenditure in food processing and manufacturing, putting a great responsibility on developing countries, as well as exporting countries. Research will be needed in design, refrigeration, handling, processing and inspection, and should be given a high priority.

Epidemiological surveys will be needed by all countries to determine the health problems existing and their relation to veterinary public health practices and the measures to be taken to minimize or control the diseases common to man and animals, new methods of control and the synthesis of antigens.

Comparative medical research will be necessary to explore problems of diseases other than communicable, such as chronic heart disease, cerebral vascular disease, cancer, metabolic entities, embryology and development, radiation and radiobiology, blindness, neurological conditions, allergies associable with animals, the use of primates and finally new fields of laboratory animal medicine. Basic studies in these subjects can be carried out on animals living under essentially the same environmental conditions, as well as utilization of water resources, air pollution, environmental sanitation and space medicine.

Many problems face an over-populated world with the advances in technical knowledge. Educating veterinarians to take into account these social dynamic forces that are changing the world is essential. This requires departments of veterinary public health both at undergraduate as well as at graduate levels to enable veterinarians to fulfil their responsibilities.

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Dr M. Kaplan	Chief, Veterinary Public Health	Division of Communicable Diseases, WHO, Geneva

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Dr A. Al Hamami	Public Health Administrator, Communicable Diseases	WHO Regional Office for the Eastern Mediterranean
Dr M. Abdussalam	Medical Officer, Veterinary Public Health	Division of Communicable Diseases, WHO, Geneva
Dr H. Hussein	Regional Adviser on Health Laboratory Services	WHO Regional Office for the Eastern Mediterranean
Miss C. Cartoudis	Conference Officer	WHO Regional Office for the Eastern Mediterranean
Miss E. Kunsti	Meeting and Training Centre Assistant	FAO, Rome

AGENDA OF THE SEMINAR

1. Opening of the Seminar
2. Addresses and Introductory Note
3. Election of Officers (Chairman, Vice-Chairmen and Rapporteur)
4. Adoption of the Agenda
5. Inter-relationships between human and animal health and diseases
6. Food Hygiene
 - a) Epidemiology of food-borne diseases
 - b) Meat-borne diseases
 - c) Processed food and animal by-products
 - d) Milk-borne diseases
 - e) Organization and administration of food hygiene control (reporting, legislation, investigation of food poisoning outbreaks)
7. Zoonoses control
 - a) Rabies
 - b) Leptospirosis
 - c) Brucellosis
 - d) Salmonellosis
 - e) Anthrax
 - f) Parasitic zoonoses
 - g) Tuberculosis
 - h) Other zoonoses
 - i) Localization of the zoonoses in nature

8. Veterinary public health, administration and practice
 - a) National level
 - b) Provincial level
 - c) Municipal level
 - d) Rural level
9. The Emerging Zoonoses
10. New Horizons in Veterinary Public Health
11. Approval of the Provisional Report of the Seminar
12. Closing Session

PROGRAMME OF THE SEMINAR

1. THURSDAY, 29 OCTOBER 1964

King Edward Medical College Hall

- | | |
|-------------------------|--|
| 9.00 a.m. - 10.00 a.m. | - Registration of Participants and Observers |
| 10.00 a.m. - 11.00 a.m. | - <u>OPENING CEREMONY</u> |
| | - Introduction by the Director-General of Health |
| | - Inauguration by H.E. The Central Health Minister |
| | - Address by the Regional Director, WHO Eastern Mediterranean Region |
| | - Address by the Representative of the Director-General, FAO |
| | - Address by the Secretary of Health, West Pakistan |
| 11.00 a.m. - 12.00 a.m. | - Recess |
| 12.00 a.m. - 12.30 a.m. | - Transport to the Seminar Site |

Park Luxury Hotel

- | | |
|------------------------|---|
| 12.30 a.m. - 2.00 p.m. | - <u>FIRST PLENARY SESSION</u> |
| | Procedure of the Seminar |
| | Election of a Chairman, two Vice-Chairmen and a Rapporteur |
| | Introduction to the Seminar |
| | Inter-relationships between human and animal health and disease |

1. THURSDAY, 29 OCTOBER 1964 (cont'd)
 - 3.30 p.m. - 6.00 p.m. - Salmonellosis
general considerations
advances in technical knowledge
control
problems
 - 8.00 p.m. - Dinner Party by the Central Government
of Pakistan at Park Luxury Hotel
2. FRIDAY, 30 OCTOBER 1964 - SECOND PLENARY SESSION
 - 9.00 a.m. - 11.00 a.m. - Brucellosis
general considerations
advances in technical knowledge
control
 - 11.00 a.m. - 11.30 a.m. - Recess
 - 11.30 a.m. - 1.00 p.m. - Brucellosis (cont'd)

- Anthrax
general considerations
advances in technical knowledge
 - 6.30 p.m. - 8.00 p.m. - Reception by WHO/FAO Secretariat
at the Faletti's Hotel
3. SATURDAY, 31 OCTOBER 1964 - THIRD PLENARY SESSION
 - 6.30 a.m. - 9.30 a.m. - Travel to Lyallpur
 - 9.30 a.m. - 11.00 a.m. - Leptospirosis
 - 11.00 a.m. - 1.30 p.m. - Visit to the Agricultural College
 - 1.30 p.m. - 3.00 p.m. - Lunch at the Agricultural College
 - 3.30 p.m. - 6.30 p.m. - Return to Lahore
4. SUNDAY, 1 NOVEMBER 1964 - OPEN - Sightseeing

5. MONDAY, 2 NOVEMBER 1964 - FOURTH PLENARY SESSION
- 9.00 a.m. - 11.00 a.m. - Food Hygiene
Epidemiology of food-borne diseases
 - 11.00 a.m. - 11.30 a.m. - Recess
 - 11.30 a.m. - 1.00 p.m. - Meat-borne diseases
 - 3.30 p.m. - 6.00 p.m. - Processed food and animal by-products
6. TUESDAY, 3 NOVEMBER 1964 - FIFTH PLENARY SESSION
- 9.00 a.m. - 11.00 a.m. - Milk-borne diseases
 - 11.00 a.m. - 11.30 a.m. - Recess
 - 11.30 a.m. - 1.00 p.m. - Organization and administration of
food hygiene (reporting, legislation,
investigation of food poisoning
outbreaks)
 - 3.30 p.m. - 6.00 p.m. - above (cont'd)
 - 8.00 p.m. - Dinner Party
7. WEDNESDAY, 4 NOVEMBER 1964 - SIXTH PLENARY SESSION
- 9.00 a.m. - 11.00 a.m. - Rabies
general considerations
epidemiology
pathogenesis
advances in technical knowledge
pre- and post-exposure immunization
and treatment in man
 - 11.00 a.m. - 11.30 a.m. - Recess
 - 11.30 a.m. - 1.00 p.m. - Rabies (cont'd)
prevention of rabies in animals
field control programmes and
problems
 - 8.00 p.m. - Dinner Party

8. THURSDAY, 5 NOVEMBER 1964 - SEVENTH PLENARY SESSION
- 9.00 a.m. - 11.00 a.m. - Parasitic zoonoses
- Echinococcosis
- Cysticercosis
- others
- 11.00 a.m. - 11.30 a.m. - Recess
- 11.30 a.m. - 1.00 p.m. - Tuberculosis
 general considerations
 advances in technical knowledge
 control
- other zoonoses
 - arthropod-borne diseases
 - others
- Localization of the zoonoses in nature
- 3.30 p.m. - 6.00 p.m. - above (cont'd)
- 8.00 p.m. - Dinner Party by the West Pakistan
Government
9. FRIDAY, 6 NOVEMBER 1964 - EIGHTH PLENARY SESSION
- 9.00 a.m. - 11.00 a.m. - Veterinary public health
administration and practice
 national level
 provincial level
 municipal level
 rural level
- 11.00 a.m. - 11.30 a.m. - Recess
- 11.30 a.m. - 1.00 p.m. - Veterinary public health (cont'd)
- 8.00 p.m. - Dinner Party
10. SATURDAY, 7 NOVEMBER 1964 - Travel to Teheran
- 12.15 hrs Depart. Lahore - 14.50 hrs Arriv. Karachi
- 15.55 hrs Depart. Karachi - 17.05 hrs Arriv. Teheran

11. SUNDAY, 8 NOVEMBER 1964
- Visit to Veterinary College
 - Visit to Institute of Parasitology, Tropical Medicine and Hygiene, and the University Campus
 - Visit to Pasteur Institute
12. MONDAY, 9 NOVEMBER 1964
- Visit to Razi Institute
 - lecture on zoonoses in Iran with special reference to Brucellosis
 - Visit to College of Agriculture
13. TUESDAY, 10 NOVEMBER 1964
- Visit to Abattoirs
 - Visit to Milk Plant
 - Visit to Meat Plant
14. WEDNESDAY, 11 NOVEMBER 1964 - NINTH PLENARY SESSION
- 9.00 a.m. - 11.00 a.m. - Discussion on food hygiene (cont'd) (epidemiology and control)
 - 11.00 a.m. - 11.30 a.m. - Recess
 - 11.30 a.m. - 1.00 p.m. - The Emerging Zoonoses
 - New Horizons in Veterinary Public Health
 - Review of the Seminar
 - CLOSURE OF THE SEMINAR

LIST OF DOCUMENTS AND BACKGROUND MATERIAL

AGENDA OF THE SEMINAR

PROGRAMME OF THE SEMINAR

LIST OF PARTICIPANTS AND OBSERVERS

LIST OF DOCUMENTS AND BACKGROUND MATERIAL

BASIC DOCUMENTS

THE INTER-RELATIONSHIP OF HUMAN AND ANIMAL
HEALTH AND DISEASE

EM/SEM.VPH/1

by Dr James H. Steele
FAO Consultant

BOTULISM

EM/SEM.VPH/2

by Dr James H. Steele
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MEAT-BORNE DISEASES

EM/SEM.VPH/3

by Professor Aage Jepsen
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HYGIENIC-BACTERIOLOGICAL EXAMINATION OF
PREPARED FOODS - PRINCIPLES AND TECHNIQUES

EM/SEM.VPH/4

by Professor Aage Jepsen
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MILK-BORNE DISEASES IN MAN
(A brief review of some fundamental aspects)

EM/SEM.VPH/5

by Professor Aage Jepsen
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EM/SEM.VPH/19
EM/VPH/1
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WHO EMRO

RESIDUES OF DISINFECTANTS AND ANTIBIOTICS IN MILK

EM/SEM.VPH/6

by Professor Aage Jepsen
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WHY THE MILK CONTROL LABORATORY IS OF MAJOR
IMPORTANCE

EM/SEM.VPH/7

by Professor Aage Jepsen
FAO Consultant

LEPTOSPIROSIS

EM/SEM.VPH/8

by Dr James H. Steele
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LIST OF SEROTYPES AND SUB-SEROTYPES OF
LEPTOSPIRA ICTEROHAEMORRHAGIAE

EM/SEM.VPH/8.1

by WHO Secretariat

BRUCELLOSIS (Undulant Fever)

EM/SEM.VPH/9

by Dr James H. Steele
FAO Consultant

TULARAEMIA (Rabbit Fever)

EM/SEM.VPH/10

by Dr James H. Steele
FAO Consultant

SALMONELLOSIS

EM/SEM.VPH/11

by Professor Aage Jepsen
FAO Consultant

ACUTE DIARRHOEAL DISEASES

EM/SEM.VPH/12

by Dr James H. Steele
FAO Consultant

ANTHRAX

EM/SEM.VPH/13

by Dr James H. Steele
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EPIDEMIOLOGICAL NOTES ON HORMONE
INFECTIONS WITH PARASITES OF ANIMALS

EM/SEM.VPH/14

by Dr M. Abdussalam, Medical Officer,
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FASCIOLIASIS IN MAN

EM/SEM.VPH/14.1

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NOTES ON VARIOUS ZONOSSES

EM/SEM.VPH/16

by Dr James H. Steele
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ARTHROPOD-BORNE VIRUS DISEASES
(Identification of Diseases)

EM/SEM.VPH/17

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FOOD HYGIENE, ZONOSSES CONTROL AND VETERINARY
PUBLIC HEALTH IN THE EASTERN MEDITERRANEAN
REGION - Results of an enquiry

EM/SEM.VPH/18

by WHO Secretariat

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REPORT ON ZONOSSES AND FOOD HYGIENE IN LEBANON

EM/SEM.VPH/C.1

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FOOD HYGIENE

EM/SEM.VPH/C.2

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MILK-BORNE DISEASES

EM/SEM.VPH/C.3

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EM/SEM.VPH/19
EM/VPH/1
ANNEX IV
page iv

WHO EMRO

ORGANIZATION AND ADMINISTRATION OF FOOD HYGIENE
CONTROL (Reporting, Legislation and Investigation)

EM/SEM.VPH/C.4

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ANIMAL DISEASES IN MAN - ZOOSES IN EGYPT

EM/SEM.VPH/C.5

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EPIDEMIOLOGICAL ASPECTS OF LEPTOSPIROSIS IN CATTLE

EM/SEM.VPH/C.6

by Dr R. Kamal
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ZOOSES IN IRAN WITH SOME EMPHASIS ON BRUCELLOSIS

EM/SEM.VPH/C.7

by Dr A. Rafyi
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ROLE PLAYED BY ANIMALS IN THE TRANSMISSION OF
ENTERIC INFECTIONS IN THE UNITED ARAB REPUBLIC

EM/SEM.VPH/C.8

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ZOOSES PROBLEMS WITH SPECIAL REFERENCE TO
ANTHRAX IN WEST PAKISTAN

EM/SEM.VPH/C.9

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WHO EMRO

EM/SEM.VPH/19
EM/VPH/1
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EM/SEM.VPH/C.10

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TAENIASIS AND CYSTICERCOSIS

EM/SEM.VPH/C.11

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IN IRAN

EM/SEM.VPH/C.12a

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A REVIEW OF THE PRESENT STATUS OF THE
EPIDEMIOLOGY OF LEISHMANIASIS IN THE WORLD
WITH PARTICULAR REFERENCE TO IRAN

EM/SEM.VPH/C.12b

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INTER-RELATIONSHIP BETWEEN HUMAN AND ANIMAL
HEALTH AND DISEASE EM/SEM.VPH/C.13

by Mr Syed Mohammed Ali
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IRAN TO-DAY AND ZOOSES EM/SEM.VPH/C.14

by Dr Seyed N. Sotoodeh
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FOOD HYGIENE IN ETHIOPIA EM/SEM.VPH/C.15

by Mr Amha Eshete
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BACKGROUND MATERIAL

FOOD POISONING

Symposium of the Royal Society of Health, London, 1962
(Papers presented at the Health Congress of the Society
in April 1960.)

WHO ADVISORY GROUP ON VETERINARY PUBLIC HEALTH, 1955	TRS No.111
WHO EXPERT COMMITTEE ON RABIES, 1950	TRS No. 28
WHO EXPERT COMMITTEE ON RABIES, 1953	TRS No. 82
WHO EXPERT COMMITTEE ON RABIES, 1956	TRS No.121
WHO EXPERT COMMITTEE ON RABIES, 1959	TRS No.201
SECOND JOINT FAO/WHO CONFERENCE ON FOOD ADDITIVES, 1963	TRS No.264
JOINT FAO/WHO EXPERT PANEL ON BRUCELLOSIS, 1950	TRS No. 37
JOINT FAO/WHO EXPERT COMMITTEE ON BRUCELLOSIS, 1952	TRS No. 67
JOINT FAO/WHO EXPERT COMMITTEE ON BRUCELLOSIS, 1957	TRS No.148
JOINT FAO/WHO EXPERT COMMITTEE ON BRUCELLOSIS, 1963	TRS No.289
JOINT FAO/WHO EXPERT GROUP ON ZOOSES, 1950	TRS No. 40
JOINT FAO/WHO EXPERT COMMITTEE ON ZOOSES, 1958	TRS No.169
JOINT FAO/WHO EXPERT COMMITTEE ON MEAT HYGIENE, 1954	TRS No. 99
JOINT FAO/WHO EXPERT COMMITTEE ON MEAT HYGIENE, 1961	TRS No.241
MEAT HYGIENE	Monograph No.33
JOINT FAO/WHO EXPERT COMMITTEE ON MILK HYGIENE, 1956	TRS No.124
JOINT FAO/WHO EXPERT COMMITTEE ON MILK HYGIENE, 1959	TRS No.197
MILK HYGIENE: HYGIENE IN MILK PRODUCTION, PROCESSING AND DISTRIBUTION	Monograph No.48

QUESTIONNAIRE
ON FOOD HYGIENE, ZOOSES CONTROL AND VETERINARY PUBLIC
HEALTH PRACTICE IN THE COUNTRIES OF THE EASTERN MEDITERRANEAN REGION

I. What are the zoonoses (animal diseases communicable to man) of importance in your country? Give whatever data you can on the prevalence of these zoonoses (bovine tuberculosis, rabies, arthropod-borne encephalitis, brucellosis, anthrax, leptospirosis, hydatidosis and other parasitic zoonoses will be discussed during the Seminar, and should receive special attention in answering this question).

.....
.....

II. Please describe the administrative set-up of the Veterinary Public Health Service in your country. Who is responsible for the overall co-ordination of Veterinary Public Health activities in the various government departments?

.....

III. What measures have been undertaken to control or eradicate the zoonoses as listed under item I, and indicate the results of such campaigns.

.....

IV. If no measures have been used to control these zoonoses in your country, are any plans being made?

.....

V. Meat hygiene practice in your country.

1. Sale of meat and meat products. Is it permissible to sell for human consumption meat and meat products that have not been submitted to official meat inspection?
.....
.....
2. Legislation. Who are the authorities responsible for legislation concerning meat hygiene and meat inspection?
.....
.....
3. Food animals. What kind of animals are comprised in the term "food animals" in your meat inspection legislation?
.....
.....
4. Food animals slaughtered: Give the approximate numbers of food animals slaughtered per year.
.....
.....
5. Slaughterhouses and premises for storage, processing and sale of meat. Is legislation in force for such establishments as slaughterhouses and all premises where meat or meat products are stored, processed and/or sold?
.....
.....
6. Handling and transportation of meat: Are regulations in force governing the maintenance of cleanliness in the handling and transportation of meat?

7. Medical examination of food handling staff. Do you have regulations prescribing physical examination for communicable diseases of staff employed in the meat industry, both before and/or during employment?
8. Meat inspection and supervision of premises Who are the authorities responsible at the national and the local levels for meat inspection, and the supervision of premises where meat and meat products are stored, processed and/or sold?
9. Meat inspection staff: Who directly employs the meat inspection staff?
10. Ante-mortem inspection: Is this compulsory?
11. Stunning before slaughter: Is this compulsory? Give short description of the methods of stunning used in your country.
12. Post-mortem inspection: Is this compulsory?
13. Give categories of diseases or conditions entailing (a) total condemnation of carcasses, and (b) partial condemnation of carcasses.

14. Judgement of meat: What are the usual terms applied in your country in the judgement of meat for human consumption?
.....
.....

15. Bacteriological examination. Is this required by law? If required, in which cases?,.....
.....

VI. Legislation and practices in food hygiene in your country concerning fish.
.....

VII. Milk hygiene practices.

1. List the commonly consumed milk and milk products (e.g., fluid cow's milk, dried cow's milk, fresh white cheese, etc.).
.....
.....

2. Who are the responsible authorities for milk hygiene legislation? Enforcement of legislation and milk hygiene practices?,.....
.....

3. Do milk handlers have medical examinations? If so, what tests are made and how frequently?,.....
.....

4. What percentage of milk is pasteurized? What are the pasteurization method(s) used? Briefly describe any other form of heat treatment or processing of milk or milk products.
.....
.....

5. What hygienic control (bacteriological and other tests) procedures are practised at (a) collecting stations, (b) pasteurizing plants, (c) retail shops?
-

VIII. Please list and describe the major veterinary public-health problems in your country.

.....

IX. Please supply three complete sets of veterinary public-health laws, rules and regulations promulgated in your country. If original is not in English, kindly supply translation or summary in English.

.....

.....

APPRAISAL OF THE SEMINAR BY PARTICIPANTS AND OBSERVERS

Participants and observers were requested to give their comments and suggestions on the Seminar by replying in writing without identifying themselves to the following questions:

1. What do you consider were good features?
2. What features do you consider were not good?
3. What suggestions do you have that would improve similar group activities for another time?
4. How do you propose to make the results of the Seminar known to your country, and also to follow them up?

Twenty replies were received and are reproduced below, classified into five groups:

1. Organization and Administration.
2. Documents.
3. Conduct of the Seminar.
4. Recommendations for Future Meetings.
5. Dissemination of Results of the Seminar.

1. Organization and Administration

An analysis of the replies shows that all participants agreed that the preparation and administrative arrangements of the Seminar were most satisfactory.

One participant complained that the period of the Seminar was very long. Five participants expressed the opinion that the programme was very condensed and left no free time to visit the town. Four advocated more time for field visits. Two felt that the programme did not leave any time free to discuss individual problems. Another participant indicated that excess luggage allowance should have been paid to participants.*

2. Documents

The majority of participants were satisfied with the information made available through the documents on the latest developments. One participant thought that each participant should be requested to submit papers on specific subjects.

One participant felt that some papers presented were of academic interest.

It was felt by another that the papers should have presented local conditions in epidemiology, demography, etc., rather than just introducing the subject concerned.

3. Conduct of the Seminar

All participants expressed appreciation for having had the opportunity to meet various scientific workers on allied subjects from countries with similar problems to their own, with whom they could discuss these important problems.

Two participants suggested that the Seminar should have been divided into groups, each of which would have discussed a specific subject.

* Documents were mailed at the end of the Conference at the expense of WHO.

As to the time allotted for discussion, two participants felt that more time should have been allocated to specific problems in each country. Another felt that valuable time was wasted by some speakers, who gave the impression that the emphasis was on the academic teaching, rather than the discussion of the overall picture and problems. It was also advocated that more time should have been given to exchange of views instead of detailed presentation of specific information.

There was one suggestion that the Seminar should have had morning sessions only, and that the afternoons should have been devoted to field visits connected with the subject under discussion that morning.

The field visits were in general found to be satisfactory, excepting one participant who thought that the programme included too many visits to veterinary institutions.

One participant thought that too much emphasis had been laid on the epidemiology of diseases in the USA and Europe during this Middle East Seminar.

Films were found very useful by two participants for supplementing discussions.

One participant expressed the opinion that individual problems should be surveyed by each country.

4. Recommendations for Future Meetings

The participants formulated the opinion that future meetings should deal with specific subjects to be discussed by committees, as this would give additional time for discussion of individual problems in each country and assist in solving problems.

A participant suggested that WHO should be encouraged to establish at the Regional Office a position of consultant in veterinary public health, to study and assist countries in establishing veterinary public health services before the next meeting.

5. Dissemination of Results of the Seminar

Twenty replies indicated that a detailed report would be submitted to Governments. One participant planned to talk on radio and television during the "Hour of the Farmer and Livestock Breeder". Another was planning a meeting with the technical people of his country to review problems discussed at the Seminar.