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FOODBORNE DISEASES IN EUROPE

Surveillance as a basis for preventive action



WORLD HEALTH ORGANIZATION
Regional Office for Europe
COPENHAGEN

TARGET 22

Food safety

By 1990, all Member States should have significantly reduced health risks from food contamination and implemented measures to protect consumers from harmful chemicals.

Index:

FOOD POISONING - prevent/control
FOOD CONTAMINATION - prevent/control
EPIDEMIOLOGY
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FOODBORNE DISEASES IN EUROPE:
SURVEILLANCE AS A BASIS FOR PREVENTIVE ACTION

Report on a WHO Consultation

Berlin
26-30 November 1990

Note

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Introduction

From 26 to 30 November 1990, Berlin was the location for a WHO Consultation entitled Situation of Foodborne Diseases in Europe: Surveillance as Base for Preventive Action. It was organized by the WHO Regional Office for Europe in cooperation with the FAO/WHO collaborating centre for research and training in food hygiene and zoonoses in Berlin, and with the financial support of the Federal Republic of Germany.

There were 24 participants from 20 countries. Representatives of the Commission of the European Communities and the International Life Science Institute, four observers and seven temporary advisers also attended. Professor D. Grossklaus, President of the Federal German Health Office, welcomed the participants, and Dr D. Boehm of the Federal Ministry of Youth, Family Affairs, Women and Health in Bonn opened the meeting.

The participants were asked to evaluate the current situation in Europe relating to foodborne infections and intoxications. Having done this, they made specific recommendations emphasizing the improvement of routine surveillance systems, epidemiological investigations, data management, laboratory investigations and an early warning system. They also made proposals on the implementation of specific studies of infectious intestinal diseases in Europe, and on specific activities for future surveillance programmes, including their contribution to the European Food Safety Conference in 1993.

During the past few years there has been a marked increase in foodborne diseases in Europe, and also a marked increase in the contamination of food with microbiological, chemical and radioactive pollutants. This has prompted public health officials to propose international action to prevent and control foodborne

infections and intoxications. World Health Assembly resolution WHA42.40 urged WHO Member States to collaborate in the area of food safety, emphasizing that they should intensify their epidemiological surveillance services and strengthen international and intersectoral collaboration in the control of foodborne infections.

In response the Regional Office organized a Consultation in October 1989 on National and International Systems for the Early Reporting and Surveillance of Foodborne Infections and Intoxications. It was concluded then that foodborne diseases had greatly increased during the previous few years, primarily due to infections with strains of Salmonella and Campylobacter species. The increase in at least 11 countries has mostly been attributed to S. enteritidis. The current incidence of more than 1200 cases per million inhabitants, as an average for Europe, is about three times higher than was recorded in 1984.

A wide range of specific recommendations emerged from the 1989 Consultation, aimed primarily at further improvement of national and international programmes for the reporting and surveillance of foodborne infections. It was emphasized that without accurate and adequate epidemiological data, it would be very difficult to make the most appropriate management decisions. The improved programmes would also provide vital data for health for all indicators related to food safety. A proposal to organize a follow-up meeting later to assess whether there had been any progress in the foodborne infections situation resulted in this Consultation.

Discussion

First on the agenda was the Fourth Report on the collaborating centre, including a review of data provided by all 32 participating countries on the surveillance of

foodborne infections and intoxications in the years up to 1984. Discussions followed on how to improve the epidemiological investigations, notification systems and reporting to the collaborating centre. This helped not only to improve the format and presentation of the Fifth Report, but also to ensure the comparability of data from participating countries.

Each delegate gave a short review of the surveillance system from which the data came, a summary of the present situation and important trends and a description of specific aspects of foodborne disease in the country in question. The Fifth Report (1985-89), now nearly finished, was based on these presentations as well as on the written reports of the participating countries.

An attempt was made to understand the significance of the national data. All countries obtain them from their routine surveillance mechanisms, but as a first step to improving intercountry comparability they should emphasize reporting of laboratory isolates from human cases. These data could best be presented as relative percentage distributions of isolates of Salmonella, Campylobacter, and so on, although it is accepted that they may not relate exactly to new cases.

Some countries' surveillance systems do not provide data on various organisms in an internationally comparable way. Matrices were discussed which would make allowance for the differences. In view of the fact that some pathogens are spread predominantly by food, others sometimes by food and yet others seldom if ever by food, certain pathogens only should be reported internationally as a matter of routine. The relevant organisms and causes are listed in Table 1, and constitute the basis for the new system of reporting to the WHO Surveillance Programme.

Table 1. Health indicators related to food safety

<u>Details</u>	<u>Notifications/outbreaks/cases</u>
<u>Most often related to foods</u>	
<u>Foodborne infectious and infestations</u>	
<u>Salmonella</u>	
<u>Campylobacter</u>	
<u>Yersinia</u>	
<u>Trichinella</u>	
<u>Taenia saginata</u>	
<u>T. solium</u>	
<u>Echinococcus</u>	
<u>Bacterial food intoxications</u>	
<u>Clostridium perfringens</u>	
<u>Clostridium botulinum</u>	
<u>Staphylococcus aureus</u>	
<u>Bacillus cereus, etc.</u>	
<u>Nonbacterial food intoxications</u>	
Scombroid poisoning	
Shellfish poisoning	
Mushroom poisoning	
Chemical pollutants	
<u>Sometimes related to foods</u>	
Typhoid and paratyphoid fevers	
<u>Shigella</u>	
Hepatitis A	
<u>Brucella</u>	
<u>Listeria</u>	
<u>Escherichia coli</u> , pathogenetic types	
<u>Vibrio cholerae</u>	
<u>V. parahaemolyticus</u>	
Related vibrios	
<u>Coxiella burnetii</u>	
<u>Sometimes related to water</u>	
<u>Giardia</u>	
<u>Cryptosporidium</u>	
<u>Entamoeba histolytica</u>	
<u>Aeromonas hydrophila</u>	
<u>V. cholerae, etc.</u>	

Note: This list is by no means complete and new organisms may need to be added from time to time.

After the 1989 meeting, the Regional Office organized a Consultation on Data Management for Foodborne Diseases in Europe in September 1990. The report of this meeting was presented and discussed. Subsequently the Office had also organized an EPI-INFO software demonstration and discussed its application in epidemiological investigations and the data management of foodborne diseases.

Another recommendation of the 1989 meeting was to organize a Consultation, also held in 1990, to develop a Core Protocol for a European Sentinel Study of Foodborne Diseases. The report of that meeting was also discussed and the objectives were reviewed. Participants discussed the advantages of these objectives and methods for achieving them in different countries.

It was announced that the Third World Congress on Foodborne Infections and Intoxications would be held in Berlin in 1992. Plans were also presented for the European Food Safety Conference in September 1993, including possible venues, participants (ministers of health and agriculture), the expected outcome, and suggested main topics.

Conclusions

Surveillance programme

1. The epidemic of foodborne illness in Europe continues in most countries, although in some others the number of cases of Salmonella infection is no longer rising significantly. Certain countries are experiencing increases for the first time.
2. Campylobacter infection continues to rise in some countries.

3. All Member States are now participating in the WHO Surveillance Programme, although their methods differ.

Data management

4. There is a clear trend towards computerization of foodborne disease investigation and surveillance programmes, mainly on a national level. The transfer of large quantities of routine data on paper from the site of an epidemiological investigation often means that useful details are lost. Inaccuracies may occur during transcription and work is duplicated.

5. EPI-INFO version 5 is a personal computer program developed for epidemiological purposes containing a word processing, database and statistical systems. It also provides simple graphics facilities. Although EPI-INFO is not at present used widely in Europe, it is available in the public domain and is supported by WHO. It is user-friendly, runs under MS-DOS and allows easy reporting of data to regional, national and international levels for further analysis. It can be used for many purposes in connection with foodborne disease control: questionnaire design, investigation of outbreaks, routine collection of data, etc. It can also be used for other purposes, saving resources and training of staff. It can exchange files with other widely used programmes.

6. The participants felt that standard descriptions of terms and coding are necessary for the satisfactory collation of data. The draft ICD-10 classification is not detailed enough for the WHO Programme. It can be used, but an additional coding list for microorganisms should be added. Some current coding lists used by the Programme are adequate, but the organism list needs expanding. For this purpose, the group felt that current developments by other European workers - such as the GEN-AIM project entitled EUCLIDES - should be considered, and so should existing coding systems such as SNOMED. Countries using more detailed coding lists must make sure

that they can be aggregated to conform with the approved codes used in the WHO Programme.

7. At present it is preferable to transfer disks to the WHO collaborating centre in Berlin, but countries unable to do this can complete the standard WHO paper form. The preference for disk transfer also applies to news items, such as descriptions of outbreaks and trend analysis, intended for the Newsletter or an electronic information system. An example of such a system is in use in England and Wales (the PHLS Epinet network) and could serve as a model. The implications in terms of legal requirements for protection of internationally transferred data need to be considered.

8. Outbreak-reporting is a surveillance system used by every country. The definition of an outbreak is clear and a reporting form already exists. Investigation of outbreaks is an appropriate way of obtaining information on food contamination and on contributing factors.

9. For outbreak-reporting, full documentation is not necessary. The minimum data set needed for international surveillance, however, needs to be defined.

10. For some items in the data set, coding is difficult, and interpretation differs between countries.

11. For international comparison - in particular to fit into health indicators for food safety, and mortality data - an internationally agreed classification is needed.

12. As EPI-INFO is not widely used in Europe at present, some countries need help in developing their databases and using the software.

Sentinel and community studies

13. Certain epidemiological information is necessary before a suitable national public health policy can be

drawn up. National data must be comparable over time, and for international surveillance, data must be comparable between countries. Comparable data are not currently available.

14. Surveillance systems in most countries do not provide adequate information on the true incidence of foodborne disease, the pathogens responsible, or trends over time.

15. Five objectives of studies are identified:

(a) to document the true incidence of foodborne disease, and causative agents in the community;

(b) to monitor trends in foodborne disease and causative agents over time and between countries;

(c) to ensure both the national and international comparability of data;

(d) to estimate the social and economic costs of foodborne disease;

(e) to identify risk factors for the acquisition of foodborne disease (e.g. demographic characteristics, food "vehicles", food processing, transport, handling and preparation).

16. A community study provides information on:

(a) the real incidence of infectious intestinal disease in the population, and the causative agents responsible, for the period of the study;

(b) comparability of data between countries - not merely over the period of the study but also in the longer term - by establishing the relationship between the true incidence in the population and data available to national surveillance systems;

- (c) demographic details of the population at risk;
- (d) possible risk factors (e.g. travel) which may be investigated by further case-control studies;
- (e) costs.

17. Sentinel primary health care continuous surveillance gives information about trends in the incidence of illness and about causative agents at primary health care (PHC) level.

18. National surveillance of laboratory isolates gives information about trends in pathogens at national and laboratory level, and can be analysed according to whichever parameters - e.g. age, sex - are collected.

19. Investigation of outbreaks gives information about
- (a) risk factors in outbreaks
 - (b) causative agents in outbreaks.

Unless common reporting practices are adopted, data will not be internationally comparable.

Recommendations

Surveillance programme

1. Specific national surveys should be encouraged, particularly in relation to emerging and newly important diseases of possibly foodborne origin, for example haemorrhagic colitis and haemorrhagic uraemic syndrome caused by verotoxin-producing E. coli (e.g. E. coli 0157).
2. Further efforts should be made to promote specific training in epidemiological techniques of investigation.

3. Reference laboratories should still be encouraged to develop and use new techniques which permit better epidemiological investigation of outbreaks.
4. Focal points should contribute more often to the Newsletter of the WHO Surveillance Programme for Control of Foodborne Infections and Intoxications in Europe, to give it a more Europe-wide orientation.
5. The WHO health indicators and coding should be reviewed by a small WHO working group, taking into account the recommendations presented in Table 1.
6. Countries should be encouraged to advise on the extent to which their foodborne infections and intoxications are imported from other countries, without specifying which.
7. WHO's regionwide educational programme for private consumers and food handlers on the hygienic handling of foods should make use of video and other media, and each country should make its own version based on a drafting frame prepared by WHO.
8. The next meeting of the national focal points should be held in conjunction with the Third World Congress on Foodborne Infections and Intoxications in June 1992.
9. The Regional Office should support technical collaboration, especially for countries in central and eastern Europe, and should continue to attract extrabudgetary resources for this. The collaboration should include:
 - (a) training courses for microbiologists in the identification of Campylobacter, Yersinia and Listeria, and in the use of rapid microbiological methods;

(b) all necessary epidemiological support for at least two years in the planning, implementation and evaluation of routine surveillance programmes, including the use of EPI-INFO, and if appropriate sentinel and community studies of foodborne diseases and intoxications.

The specific needs of each country should be taken into account.

Data management

10. Computers should be used for the surveillance and investigation of foodborne disease, to improve the standard of the data, to reduce paperwork and to facilitate the international surveillance Programme. Computerization should take account, where possible, of the need for surveillance of other communicable diseases.

11. EPI-INFO should be adopted as the correct software to aid the epidemiological investigation and surveillance of foodborne infections.

12. In addition to the ICD-10 codes, a detailed organism-code list should be considered, taking into account existing codes (e.g. SNOMED) and those under development (e.g. GEN-EUCLIDES). Either a classification should be made of causative agents of foodborne outbreaks other than organisms, or existing classifications should be adopted. An additional coding system is needed for infrequent or new agents not related to ICD-10 items. Codes of extended classification of organisms should also be used when appropriate (e.g. phage-typing or other typing schemes).

13. The WHO Programme should computerize the database as soon as possible. Each country should send data to the Berlin centre at least once a year. Those not yet in a position to send computerized data should provide them in the most suitable form.

14. The results of outbreak investigations in different countries should be pooled, to provide information on the vehicles and risk factors for the transmission of foodborne disease that are involved.

15. The minimum data set for an outbreak report should include: country of outbreak, time of outbreak, number affected, number of deaths, food implicated, place where food was eaten, factors contributing to the outbreak, and causative agent.

16. The coding system and standard reporting forms should be revised by a small WHO working group and each code should be precisely defined. The finalized system and reporting forms should be distributed to the focal points for approval prior to the next meeting in 1992.

Sentinel and community studies

17. Each Member State should undertake a study to estimate the true incidence of foodborne disease in its population. The studies will be based on the core protocol and will be coordinated internationally to ensure the comparability of the results and facilitate the exchange of experience and expertise.

18. In order to achieve the objectives, countries should consider either a community-based study, or a combined community-based and sentinel PHC doctor study, whichever is most appropriate financially and organizationally.

19. Laboratory-based surveillance systems should be considered as an option for long-term trend monitoring.

General

20. A consultative group should be set up to start and to coordinate the focal points' activities related to:

- (a) advising the Regional Office;
- (b) advising the collaborating centre;
- (c) revision of coding system, introduction of a new data management system, etc.;
- (d) organizing sentinel and community studies.

21. Countries whose health care and public health systems are undergoing a change should preserve their present surveillance systems, and with other Member States they should attempt to collect data in a form compatible with the principles agreed to at this meeting.

Annex 1

LIST OF BACKGROUND MATERIAL^a

Extended draft report of the Consultation to Develop a Core Protocol for a European Sentinel Study of Foodborne Diseases, Bilthoven, 11-13 June 1990 (ICP/FOS 019).

Extended draft report of the Consultation on Data Management for Foodborne Diseases in Europe, Zadar (Yugoslavia), 5-7 September 1990 (ICP/FOS 022)

^a Copies are available from the Toxicology and Food Safety unit, WHO Regional Office for Europe, 8 Scherfigsvej, DK 2100-Copenhagen O.

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