

**FOOD STANDARDS AGENCY/SCOTTISH  
EXECUTIVE HEALTH DEPARTMENT**

**GUIDANCE ON THE INVESTIGATION AND CONTROL  
OF OUTBREAKS OF FOODBORNE DISEASE  
IN SCOTLAND**

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## FOREWORD

A revision of the guidelines on the investigation and control of outbreaks of foodborne disease in Scotland was agreed by the Scottish Executive Health Department and the Food Standards Agency Scotland. Part of the remit of the revision was to consider the roles and responsibilities of the Food Standard Agency Scotland and other national organisations, especially the Scottish Centre for Infection and Environmental Health, the definition of a 'National Outbreak', the development of a protocol for food and environmental investigations, the support mechanisms for Local Authorities and the current epidemiological investigation and its adequacy.

Those involved in the investigation and control of outbreaks of foodborne disease were consulted and a small working group set up to advise on the revision process. The group met on four occasions between April and November 2001, and the draft revision was distributed for comments in July and August. The working group recognised the need for guidance on general outbreaks and outbreaks of water borne disease and separate groups have been commissioned to develop specific guidelines in these areas.

These guidelines are recommended to all those involved in the investigation and control of outbreaks of foodborne disease in Scotland. Regular training and exercising of these guidelines are important to develop expertise and establish the necessary team-working arrangements. Local plans should be revised on a regular basis in light of these revised guidelines, recognising the role of the Food Standards Agency and the need for co-ordinated approaches in tackling large outbreaks and those which involve more than one geographical area. The working group also recommends the development of standard setting and regular audit of the management of outbreaks.

I would like to pay tribute to all those who have contributed to this current revision of these guidelines and to those who have contributed to the original guidance and the subsequent revisions.

Professor WCS Smith  
Chairman

## ABBREVIATIONS

<b>CPHM (CD/EH)</b>	Consultant in Public Health Medicine (Communicable Disease/Environmental Health)
<b>CSA</b>	Common Services Agency
<b>DMO</b>	Designated Medical Officer
<b>DPH</b>	Director of Public Health (for legislative purposes assume DPH substitutes for Chief Administrative Medical Officer CAMO)
<b>EC</b>	European Community
<b>EHO</b>	Environmental Health Officer
<b>FSO</b>	Food Safety Officer
<b>FSA(S)</b>	Food Standards Agency (Scotland)
<b>HSE</b>	Health and Safety Executive
<b>LA</b>	Local Authority
<b>LACORS</b>	Local Authorities Coordinators of Regulatory Services
<b>MHS</b>	Meat Hygiene Service
<b>NHS</b>	National Health Service
<b>NHSB</b>	National Health Service Board
<b>OCT</b>	Outbreak Control Team
<b>OMST</b>	Outbreak Management Support Team
<b>OVS</b>	Official Veterinary Surgeon
<b>SAC</b>	Scottish Agricultural College
<b>SCIEH</b>	Scottish Centre for Infection and Environmental Health
<b>SEPA</b>	Scottish Environment Protection Agency
<b>SFELC</b>	Scottish Food Enforcement Liaison Committee
<b>SEERAD</b>	Scottish Executive Environment and Rural Affairs Department

<b>SEHD</b>	Scottish Executive Health Department
<b>SEInD</b>	Scottish Executive Information Directorate
<b>SIDSS</b>	Scottish Infectious Diseases Surveillance System
<b>SO</b>	The Stationery Office
<b>SVS</b>	State Veterinary Service
<b>WHO</b>	World Health Organisation

# CHAPTER 1

## SURVEILLANCE

### Defining an Outbreak

- 1.1 An outbreak of infection or foodborne illness may be defined either as two or more linked cases of the same illness, or as the situation when the observed number of cases unaccountably exceeds the expected number.
- 1.2 An essential part of any programme for the control of outbreaks of illness is the recognition of a change in the distribution of illness. To this end surveillance, ie the collection, collation, analysis and dissemination of information, is a vital tool. Three sources of data are important in the surveillance of foodborne diseases - the notification system, laboratory reporting and information on outbreak investigations. Surveillance is carried out at local, national and international level.

### Notification

- 1.3 In terms of the Public Health (Notification of Infectious Diseases) (Scotland) Regulations 1988 (see Appendix III)
  - (1) A medical practitioner attending a patient suffering from food poisoning has a duty to notify the Director of Public Health (DPH) of the National Health Service Board (NHSB) for the area using the prescribed form.
  - (2) The DPH is required to send to the Common Services Agency (CSA) a return of the number of cases notified in the area each week.
  - (3) A DPH who receives a notification relating to a patient who usually resides outwith his/her area is required to notify forthwith the relevant DPH.
  - (4) The DPH must report to the Chief Medical Officer, Scottish Executive Health Department (SEHD) any serious incidents.
- 1.4 Food poisoning is not defined in the legislation. The World Health Organisation (WHO) definition, which has been used in Scotland for some years was, on the advice of the Advisory Committee on the Microbiological Safety of Food, adopted for use throughout the UK in 1992 -

**“Any disease of an infectious or toxic nature caused by or thought to be caused by the consumption of food or water”.**

Although the words “food poisoning” are used in legislation the terms now more generally used are “foodborne disease” or “foodborne illness”.

- 1.5 In practice, DPHs normally delegate responsibility for receiving, analysing and processing notifications to the Consultants in Public Health Medicine

(Communicable Diseases/Environmental Health). It is for those CsPHM (CD/EH) to ensure that general practitioners and other clinicians are aware of their responsibility to notify cases of food poisoning and of the mechanisms for doing this in their areas. Early reporting by telephone followed up by formal notification should be encouraged where serious symptoms or an outbreak is suspected.

- 1.6 CsPHM (CD/EH) may also receive reports of cases of suspected food poisoning from other sources such as laboratories and Environmental Health Officers/Food Safety Officers (EHOs/FSOs) of Local Authorities (LAs).
- 1.7 The notification data are collated at the CSA and published in the Weekly Report of the Scottish Centre for Infection and Environmental Health (SCIEH).
- 1.8 Notification data are communicated directly by National Health Service Boards to SCIEH by means of an electronic communication system.

### **Laboratory Reports**

- 1.9 In addition to advising CsPHM (CD/EH) of isolates of organisms which may be foodborne, all NHS microbiology laboratories participate in a system of voluntary reporting to SCIEH, making weekly returns. The data are published in the SCIEH Weekly Report.

### **Outbreak Reports**

- 1.10 Scotland has participated since 1980 in the European Surveillance Programme for Foodborne Infections and Intoxication's set up by WHO. This programme depends on accurate summary data being recorded by NHSBs and forwarded to SCIEH where the data are collected, collated and analysed.
- 1.11 During the first 15 years of this programme information was gathered on general community and household outbreaks. This has allowed an extensive database to be created, identifying the numbers affected, the organisms concerned, the foodstuffs involved and factors contributing to the outbreak. From the beginning of 1996 a new surveillance system including all infectious intestinal disease, but restricted to outbreaks including more than one household, has been in operation.

### **Communications**

- 1.12 An essential function of any surveillance system is to facilitate timely investigation and control measures. This requires rapid communication and electronic methods of communication between laboratories, National Health Service Boards and SCIEH are in development which should enable better and more accurate transmission of data.
  - 1.12.1 An international communication system called EnterNet has been established, primarily involving members of the European Community but also including other European countries. This network identifies

named contacts who are prepared to collaborate with surveillance of salmonella and *E.coli* infection. It can act as an early warning system. It can also be utilised for surveillance of other foodborne pathogens.

1.12.2 EHCnet for Scotland is a dedicated on-line service designed to support the environmental health community, 24 hours a day, 365 days a year. The service provides confidential dissemination of information between local authority environmental health departments, central government and users in industrial and commercial organisations. The system links Scottish Local Authorities, Local Authorities in England and Wales, Port Health Authorities, SCIEH and The Food Standards Agency.

### **Veterinary Surveillance**

1.13 Animal populations form the reservoir for many of the micro-organisms responsible for human foodborne disease. The prime role of the veterinarian in relation to human public health is the control and removal of infection from the animal reservoir.

1.14 Four groups of veterinarians are involved:

- veterinary surgeons in private practice
- the State Veterinary Service (SVS) of SEERAD (also as Veterinary Advisors to FSA(S))
- the Scottish Agricultural College (SAC) Veterinary Services which provides advisory and laboratory back up for private practitioners and SVS
- Meat Hygiene Service (MHS).

1.15 The SVS has responsibility for the control of diseases, which are notifiable under the Animal Health Act 1981. These include zoonoses such as brucellosis, anthrax and bovine tuberculosis. The common foodborne infections in people eg campylobacteriosis and salmonellosis are not notifiable in animals.

1.16 The SVS also has responsibility for enforcement of the Zoonoses Order 1989. This legislation requires the presence of salmonella or brucella from an animal or bird, or from the carcass, product or surroundings of an animal or bird or from any feedingstuff to be reported to a Veterinary Officer who normally communicates the information to the CPHM (CD/EH) and the LA. Collection of these data enables the presence and distribution of salmonella in food animal populations to be related to infection in humans where appropriate.

The SVS is given the power to control the movement of animals, and to require cleansing and disinfection to reduce the risk to human health from these organisms.

- 1.17 The SAC laboratories send reports of isolates of salmonella to SCIEH and these are included in the Weekly Report.
- 1.18 The Meat Hygiene Service is responsible for the supervision of establishments licensed and approved under relevant meat hygiene legislation.

### **Role of SCIEH**

- 1.19 SCIEH is the national centre in Scotland responsible for providing surveillance information and operational support to NHS Boards and Local Authorities, including OCTs. SCIEH should be contacted urgently if a serious or widespread outbreak is suspected, or when an unusual organism or epidemiological pattern is detected. SCIEH may then be able to provide information about the current epidemiology of the organism, and evaluate and communicate the wider importance of the outbreak. In addition, when invited by an OCT, SCIEH can assist with the co-ordination of the outbreak's descriptive and analytical epidemiological investigation, and assist with the collection, collation and dissemination of information from the different areas and bodies involved.

### **Food Safety Surveillance**

- 1.20 Food safety surveillance in Scotland is normally carried out by LAs. Food surveillance, as currently exists in Scotland, is co-ordinated by the Scottish Food Coordinating Committee through the Food Standards Sub Committee, which produces an annual surveillance programme based on specific survey topics. This programme compliments the work carried out on behalf of FSA(S), LACORS and the EU.

### **Microbiological Surveillance**

- 1.21 There are 3 main activity areas.
- 1.21.1 The European Community Coordinated Food Control Programme, which is regulated by the EC Official Control of Foodstuffs Directive, is agreed annually by a Commission Working Group. It covers both microbiological and chemical sampling and analysis and is EC wide. Tests and test methods are prescribed. The results are collated nationally and sent to the Commission for final collation. In Scotland the input to the Programme is coordinated by the SFELC which also co-ordinates some food surveillance work. The number of samples taken and whether or not they were satisfactory are notified to FSA(S) quarterly.
- 1.21.2 Local Food Liaison Group programmes are carried out under the umbrella of SFELC and are based on locally perceived problems and needs. The results are usually published either as a stand-alone publication or in a suitable journal.

- 1.21.3 Individual LA's programmes are usually based on local needs and priority is given to food which is produced or manufactured in the area. The results are not normally published but problems identified may be notified under the Food Hazards Warning System (Appendix VI).

### **Chemical Surveillance**

- 1.22 The activity areas for chemical surveillance are the same as for microbiological surveillance. FSA surveys are carried out under the aegis of the Steering Group on Chemical Aspects of Food Safety. The results of this are published by The Stationery Office (SO).

### **Water Safety Surveillance**

- 1.23 Under the provisions of the Water (Scotland) Act 1980 and the subsequent amendments from the Water Act 1989, water supplied for domestic purposes must be wholesome. Water is considered wholesome if it does not exceed the Prescribed Concentration or Value (PCV) for any parameter listed in Regulation 3 of the Water Supply (Water Quality) (Scotland) Regulations 1990 (amended 1991) that the water does not contain any element, organism or substance (whether or not a parameter) at a concentration or value, alone or in combination, which would be detrimental to public health. Unwholesome water is not necessarily a threat to public health by being unfit for human consumption as the breach of the PCV may be only a transient and trivial occurrence. The majority of PCVs are based on lifetime exposure and all are set at levels well below those likely to give acute health effects.
- 1.24 Regulation 29(4) of the 1990 Regulations refers to a "significant risk to health". LAs, NHSBs and Scottish Ministers must be notified of any event that is likely to affect the public water supply and give rise to a significant risk to the health of persons residing in the area of that Authority or Board. There is no definition given for significant risk to health, however SCIEH along with toxicological and microbiological advisers have produced guidance upon Significant Medical Risk Values (SMRV) for Water Parameters. The only microbiological parameters which have SMRV values are coliforms and *E.coli*, since these indicator organisms are routinely measured in water. Examination for pathogenic microorganisms is not routinely undertaken within the Water Industry, however, when there has been any significant event which may result in pathogenic microorganisms entering the water supply distribution system, monitoring should be undertaken. The most common pathogens encountered in Scotland in recent years, which have been implicated in waterborne outbreaks in public and private supplies have been - *Cryptosporidium* sp, *Campylobacter* sp and *E.coli* O157.

Other organisms which have been less frequently encountered were *Giardia* sp, *Salmonella* sp, *S.typhi* and viruses which may have been responsible for outbreaks of viral gastroenteritis.

- 1.25 Although the public water supply regulations require the preparation of annual reports on drinking water quality in terms of both microbiological and physico-chemical standards, LAs can independently monitor the quality of public water supplies. The sampling and monitoring of private water supplies falls solely under the control of the LA. The Private Water Supplies (Scotland) Regulations 1992 set out rules on how often a LA must take a sample of water from a private supply, what tests it must do on a sample, and how much it can charge. They also have the powers to require improvements to private supplies where the supply is unwholesome or insufficient. Most private supplies serve individual or small groups of premises but some may also provide water to “high risk” establishments such as schools, hotels, hospitals, nursing homes and residential homes, guest houses and food premises.
- 1.26 Surveillance by SCIEH of laboratory isolations of organisms causing gastrointestinal infection (e.g. cryptosporidiosis) may provide an early indication of a waterborne outbreak if an unusual cluster of cases is reported from a single or multiple localities. In addition, SCIEH administers a national surveillance scheme for the reporting of waterborne incidents affecting (or potentially affecting) human health. This national perspective may be instrumental in identifying longer term problems which may not be apparent at local level as well as providing baseline incidence level.

## CHAPTER 2

### ORGANISATIONAL ARRANGEMENTS

#### The Responsibilities Of National Health Service Boards And Local Authorities

- 2.1 Responsibility for the control of communicable disease in Scotland is shared by NHSBs and LAs and in exercising their respective functions NHSBs and LAs have a statutory duty to co-operate with one another (see Appendix III).
- 2.2 Responsibility for the enforcement of the food safety legislation and for the enforcement of statutory measures to control foodborne disease rests with LAs (see Appendix III).
- 2.3 General guidance outlining the arrangements for dealing with outbreaks which NHS Boards should put in place in consultation with other agencies is provided in “National Health Service in Scotland Manual of Guidance Responding to Emergencies”, Annex P - incidents involving infection/infectious disease and the circular, NHS MEL(1998) (76).
- 2.4 NHSBs have a statutory duty to designate medical officers to assist the LAs to carry out their statutory functions (see Appendix III) and LAs are required to provide these Designated Medical Officers (DMOs) with support from their own staff. In practice DPHs and CsPHM (CD/EH) act as DMOs and perform their duties in collaboration with Environmental Health Officers/Food Safety Officers (EHOs/FSOs).
- 2.5 The CPHM (CD/EH) acting on behalf of the DPH and also as a DMO of the LA normally leads and co-ordinates the investigation of outbreaks. He or she also advises on control measures, including whether an Outbreak Control Team should be set up.
- 2.6 Most members of an OCT should know each other and the organisations represented before an outbreak occurs. Emphasis is placed on the importance of liaison and team work in managing an incident or outbreak. The organisations concerned should meet regularly to discuss procedures and these should be rehearsed regularly.
- 2.7 All parties likely to be involved in an OCT should establish a working dialogue and trust, preferably prior to the emergency situation, so that when a major incident occurs it may be dealt with more effectively.

#### Outbreak Control Plan

- 2.8 Joint, co-ordinated outbreak control plans should be drawn up by NHSBs and LAs in consultation with NHS Trusts, FSA(S), Water Authorities, SCIEH and other public service organisations who may be required to participate. Such plans should be reviewed annually and jointly exercised on a regular basis.

Formal endorsement of the joint plan by both NHSB and LA is recommended as this would facilitate the smooth working of the plan when put into operation.

2.9 Plans should outline a comprehensive approach to the control and investigation of major foodborne outbreaks, and taking account of the guidance given in this document, should include:

- arrangements for the setting up of an Outbreak Control Team (OCT) to manage an outbreak;
- a clear statement about the leadership of the OCT;
- recognition that the OCT should act with the delegated authority of the NHSB and LA involved (which should be specified);
- a statement of the aims and objectives and terms of reference of the key organisations/groups/individuals of the team;
- in food related outbreaks the arrangements for notifying FSA(S);
- the arrangements for informing SCIEH, relevant laboratories and SEHD;
- arrangements for the setting up of an Outbreak Management Support Team (OMST) and its role, including the speedy resolution of issues from the OCT;
- arrangements for care of patients;
- arrangements for the activation of major incident plans in the event of incidents involving large numbers of ill people;
- arrangements for linking to other emergency plans;
- arrangements for staff liaison both in and out of normal working hours and provision of staff out of hours;
- an outline of key control measures which may be implemented and how their effectiveness will be reviewed;
- an outline of the step by step approach to outbreak investigation (as detailed in Appendix VIII);
- clear arrangements for media liaison and the appointment of a spokesman as required;
- arrangements for keeping professional colleagues, general public, and relevant organisations (including neighbouring LA and NHSBs) informed on a regular basis;

- arrangements for dealing with outbreaks which involve other NHSBs, multiple LAs or a number of Trusts on a National basis;
- arrangements to deploy staff from other LAs and NHSBs/NHS Trusts if required for major outbreaks; and
- recognition of the possible need to import expertise from outside the area, if required.

### **Outbreak Control Team**

- 2.10 It is the responsibility of the CPHM (CD/EH) to identify the need for an OCT following consultation with key members of the OCT core group identified in paragraph 2.14 and to set the Outbreak Control Plan in motion. Consideration should be given to the setting up of OCTs as early as possible and even for outbreaks that appear small in size - i.e. the 'threshold' for their establishment should be low. OCTs if established can be a useful way of exercising outbreak plans, and can always be 'stood down' if thought to be unnecessary.
- 2.11 The OCT is a multi-disciplinary group and will investigate the outbreak, take control measures as appropriate and ensure that arrangements for the care of cases are in place. It is expected that the team will normally be led by the CPHM (CD/EH) acting in his joint role of CPHM and DMO, even in situations where foodborne outbreaks originate on hospital premises.
- 2.12 As a guide, an OCT should be called when one or more of these conditions apply:
- the disease poses an immediate health hazard to the local population,
  - there is a significant number of cases,
  - the disease is important, in terms of its severity and its power to spread,
  - cases have occurred in a number of NHSBs and LA areas with no obvious geographical point of source,
  - cases have occurred in a high risk establishment such as schools, hotels, hospitals, nursing homes and residential homes, guest houses and food premises.
- 2.13 In an outbreak confined to one NHSB area the CPHM (CD/EH) for the area will normally lead the team. If more than one NHSB area is involved then agreement should be reached that one NHSB will take the lead responsibility. In these circumstances the CPHM (CD/EH) should involve FSA(S) in the decision to set up a multi Health Board OCT. As per paragraph 3.22.

## **Membership Of The Outbreak Control Team**

2.14 The membership of the OCT will vary according to circumstances. In the interests of the group functioning most effectively the accent should be on keeping the membership of the working group to a minimum. Membership of a core group should be defined.

Key members of the core group will normally be:

- the CPHM (CD/EH),
- EHO,
- Consultant Microbiologist,
- Secretarial support.

Depending on the size of the outbreak and nature of the illness involved other individuals may be co-opted as appropriate, but need not all be accorded full member status: e.g.:

- FSA(S) representative,
- SCIEH representative,
- Press Officers of NHSB and LA,
- Scottish Executive representative,
- Consultant in Infectious Diseases,
- Infection Control Nurse,
- Veterinary representative,
- General Practitioner representative,
- Public Analyst,
- Food Examiner,
- Toxicologist/Virologist,
- Water Authority representative,
- Scottish Environment Protection Agency (SEPA) representative,
- Health and Safety Executive (HSE) representative,
- Representatives of other authorities/agencies involved including co-terminous LAs/NHSBs.

- 2.15 Meetings will normally be chaired by the CPHM (CD/EH) and adequate secretarial support must be provided. At the first meeting the Chair should remind the OCT participants of their roles and responsibilities and status as members of the group.

The status of individual OCT members should be decided at the first meeting e.g. full member, in attendance or observers only, depending on their particular role. Prospective members should all be required to declare any possible conflicts of interest as individuals or on behalf of their organisations. Where a declaration of a possible conflict of interest is made, it should be recorded and a decision made by the chair on that individual's status, if they are to remain on the group. Individuals who are not full members may continue to attend the OCT but should not expect to have equal rights in terms of determining the conduct of the investigation, the advice given to the public, the content of press statements or the final OCT report.

- 2.15.1 Careful consideration should be given to the composition of the agenda, the timing and the duration of meetings.
- 2.15.2 A draft agenda for meetings is included in the appendices. (see Appendix VII).
- 2.15.3 Attention should be paid to the different information requirements of the print and broadcast media and the crucial issue of timing, to ensure optimal dissemination of information.
- 2.15.4 In large and/or lengthy outbreaks, there will be a need to make appropriate provisions for the stress and exhaustion of OCT members.

### **Role of the Outbreak Control Team**

- 2.16 The role of the OCT is:

- to agree and co-ordinate the activities of the agencies involved in the control and investigation of the outbreak in order that the aetiology, vehicle and source of the outbreak are identified and control measures are implemented as soon as possible and if required, legal advice sought.

This may involve all or some of the following:

- case finding and interviews
- clinical and environmental sampling
- consideration that waterborne disease may be implicated
- inspection of suspected premises

- to identify the need for appropriate medical care facilities for patients and ensure that local hospital plans are adequately addressed
- to agree action to control the outbreak and prevent further spread by means of exclusions, withdrawal of foods thought to be hazardous (it may be necessary for members of the OCT formally to request information in terms of the relevant legislation), closure of premises etc always paying due attention to the need for effective risk assessment and management, and the primacy of public health over commercial considerations
- to agree and co-ordinate the provision of advice to general practitioners and other professionals and to the public including the setting up of a help line if required
- to generate a hypothesis for the potential causes of the outbreak
- to investigate hypothesis using analytical epidemiological studies
- to agree arrangements for media liaison including press statements and the regular release of information
- to lead and co-ordinate all activities in the case of a multi board OCT
- to inform and liaise with SCIEH, SEHD and FSA(S) colleagues
- to produce a full report or reports, including lessons learned, for NHSB, LA, FSA(S), Scottish Executive, SCIEH and other interested parties

Suggested template for an outbreak control team report is available in Appendix XV.

- to consider specific advice/guidance for patient support/voluntary groups in particular circumstances.

2.17 Individual agencies should carry out investigations or take control action only after discussion with the team or, if that is not practical, with the Chairman who will keep the team fully informed.

2.18 It is imperative that members of the OCT share all the available information even if it is still confidential in nature.

## **Outbreak Management Support Team**

2.19 Where a situation develops into a large scale incident/outbreak of national interest, consideration should be given to setting up an Outbreak Management Support Team (OMST) at the request of the OCT leader. The OMST would provide logistical, strategic and additional backup assistance, thus allowing the OCT to concentrate on the essential business of tackling the outbreak. The OCT leads the management of the outbreak and the role of the OMST is to provide support on request, during the investigation.

2.19.1 Among the circumstances in which the OCT leader may request setting up an OMST are:

- sufficient number of cases to place undue stress on the LA and/or health care services
- large volume of enquiries resulting from increasing media and political interest.

2.19.2 Suggested membership of the OMST includes:

- Director of Public Health
- National Health Service Board Chief Executives
- NHS Trust Chief Executive
- Director of Environmental Services (or equivalent) for the LA (unless already a member of the OCT)
- Chief Executive of the LA and where appropriate Water Authority
- Press Officers from the NHSB, LA and FSA(S)
- Chairman of the local health council (if considered appropriate to have a lay representative).

2.19.3 The OMST remit should remain flexible so that it may be adapted as required in response to the nature of the incident and the local circumstances which prevail. The remit functions may include:

- support the OCT by providing an alternative contact point to deal with certain aspects of the media enquiries
- provide a focal point of contact with the FSA(S)/SEHD who have responsibility to brief Ministers
- deal with enquiries from local and national politicians

- respond to requests from the OCT leader where additional help is required to resolve problems which may compromise the action of the OCT.

2.19.4 The OMST will also be responsible for mobilising additional resources on request to aid the control of the outbreak and support the OCT. This may involve additional input from administrative, clerical, legal and information services out of normal working hours.

## CHAPTER 3

### THE INVESTIGATION AND CONTROL OF OUTBREAKS

- 3.1 Although most acute episodes of foodborne disease in this country are of microbiological aetiology, incidents due to chemical contamination do occur. The general principles of investigation apply to both types of incidents. A structured approach to investigation is recommended and a step-by-step guide can be found in Appendix VIII.
- 3.2 The principles of managing outbreaks of foodborne illness in health care premises are the same as for community outbreaks. The CPHM (CD/EH) must be notified of all such incidents and will convene an OCT as appropriate (see 2.10). Detailed guidance on the management of outbreaks in hospital is given in the Scottish Infection Manual, which was issued in Autumn 1998.

#### **Identification Of Outbreaks**

- 3.3 The clustering of cases in terms of time or place should alert the CPHM (CD/EH) or EHOs/FSOs to the possibility of an outbreak in the area. Such clustering may first be noted through the formal notification system or through information from clinicians, laboratories or the general public. Outbreaks, particularly those involving more than one NHSB area, may be recognised through the SCIEH surveillance system.
- 3.4 Many outbreaks are already over by the time they are reported or discovered in which case the focus of investigation will be on elucidating the cause and on the prevention of a future episode. A full OCT need not be convened unless the CPHM (CD/EH) thinks it is necessary after consultation.

#### **The Preliminary Stage Of Investigation**

- 3.5 A simple definition of a “case” for the purpose of the outbreak should be formulated (eg a case is any person with diarrhoea who ate at a specified establishment between specified dates). The initial case definition should be designed to include all those who could reasonably be part of the outbreak. It needs to define geographical, clinical and temporal parameters and whether temporary residents are included. This definition may have to be modified later. When an OCT is preparing briefing papers or press releases, particular care should be taken over what is called a ‘case’. The press and public are likely to assume that a ‘case’ is someone who is ill, and any other usage – however carefully defined – may cause confusion. Even when care is taken, difficulties can arise when the media interpret, for example, the reporting of a batch of positive microbiological results from asymptomatic people as a sudden increase in the number of ill people. A small outbreak can appear to be out of control merely because of returning laboratory results.

- 3.5.1 It may be prudent therefore to restrict the term 'case' to someone who is ill. Cases can be subdivided into 'confirmed' (on appropriate microbiological criteria) and 'unconfirmed'. While a further refinement of the term 'unconfirmed' into, say, 'probable' and 'possible' may be of value to the OCT, such specificity is seldom of help in briefing papers and press releases.
- 3.5.2 Whether it is appropriate to include in briefing papers and press releases information on people who are microbiologically positive but asymptomatic should be considered very carefully. If they are to be made public, then to avoid confusion the use of a term such as 'well carriers' rather than 'case' or 'case of infection' might be wise.
- 3.5.3 Similarly, the value to the investigation and control of an outbreak of serological investigations should be weighed carefully before being undertaken, and if performed the advantages of disclosure outside the OCT should be considered. If it is deemed appropriate, such people would be described according to the advice of the microbiologist, but a term such as 'previously exposed to infection' might be appropriate.
- 3.5.4 When an outbreak involves more than one NHSB, it is important to ensure consistency in the case definition that is adopted for the investigation and management of the outbreak.
- 3.6 A detailed history of the illness, and the time and place of all food and drink consumed over at least the preceding week should be taken from cases and suspected cases in an effort to identify common factors.
- 3.7 Arrangements should be made to obtain appropriate specimens from the patients if this has not already been done.

### **Food Premises**

- 3.8 As soon as there is reasonable suspicion, which may fall well short of scientific proof, that food premises are involved in a serious outbreak, then an inspection of implicated premises should be made as soon as possible. This will normally be undertaken by an EHO/FSO, but (see Appendix III) the CPHM (CD/EH), in his capacity as DMO, may accompany the EHO/FSO.
- 3.9 There can be benefits in involving environmental health officers/food safety officers with knowledge of the food business in the premise under investigation, perhaps in collaboration with a more experienced environmental health officer/food safety officer, where appropriate. The officers involved should be qualified in accordance with the relevant Code of Practice made under the Food Safety Act 1990.
- 3.10 Available information in the premise and/or computer files should be checked at the earliest stage to ascertain whether this is helpful to the investigation.

- 3.11 The inspection of implicated premises must be thorough and during the inspection officers should have regard to statutory requirements and advice in relevant Codes of Practice.
- 3.12 It is recommended that an aide-memoire is used to assist in the conduct of the inspection in order to facilitate a structured approach to the inspection process. An aide-memoire, which may be used, or adapted for use, is included at Appendix XIII.
- 3.13 As much information as possible should be obtained and carefully noted at the time of the premises inspection. The information gathered will vary according to the type of premises but should include, as appropriate, details of: a consideration of the legislation applicable; observing what is taking place; discussion of procedures and food handling practices with both management and staff; identification of weaknesses within the system currently operating; assessment of the risks; adequacy of cooking and cooling processes; cross contamination risks; adequacy of cleaning of equipment; and ensuring staff know what to do and are actually doing it. Other information which should be gathered would include: details of any suspect food remaining; raw ingredients and food suppliers; menus; monitoring records, including those for a Hazard Analysis Critical Control Point (HACCP) assessment, if available; and staff details, including adequacy of staff training and details of any illness.
- 3.14 The EHO/FSO should consider the need for enforcement action.

In any major outbreak the OCT should consider whether it would be helpful to involve the police, to make use, in particular, of their expertise in making visual recordings eg of shop premises, in gathering and labelling potential court productions and in collating statements.

- 3.15 If a water supply is implicated, the following additional details should be sought: water sources; treatment systems; storage; distribution; monitoring records; and inspection of available maintenance records
- 3.16 If appropriate the local Waterborne Hazard Plan should be implemented and the relevant Water Authority notified. The Bouchier Report (Cryptosporidium in Water Supplies) contains a great deal of useful information regarding the investigation of outbreaks of Cryptosporidium, which may be applicable to other outbreaks.

### **Inspection, Detention and Seizure of Suspect Food**

- 3.17 Environmental Health Officers/Food Safety Officers have powers under the Food Safety Act 1990 to inspect, detain and seize food suspected of being contaminated, unfit or otherwise unsafe. EHOs/FSOs exercising these powers should follow the advice contained in the relevant Code of Practice made under the Food Safety Act 1990. Consideration should be given to the need for and the most appropriate samples and swabs to be taken to assist in the investigation (see Sections 3.46 and 3.47).

## **Closure of Premises**

- 3.18 Under the Food Safety Act 1990, powers exist to achieve closure of premises or prohibition of a particular process, or the prevention of use of a piece of equipment where there is 'imminent risk of injury to health'. Exercise of such powers requires care and awareness of the consequences with, however, the safety of customers being paramount. Environmental Health Officers/Food Safety Officers exercising these powers should follow the advice contained in the relevant Code of Practice made under the Food Safety Act 1990.
- 3.19 Where voluntary agreements on closure or withdrawal of food are entered into, it is essential that both parties understand precisely the terms of the voluntary agreement and they should be recorded in writing.
- 3.20 Consideration should be given to the need for closure of premises at the earliest possible stage following implication in any outbreak, either on a voluntary basis or, where imminent risk of injury to health exists, use of the emergency prohibition powers available in the Food Safety Act 1990. One advantage of closing a whole operation would be to release employees to assist in investigation and in particular to assist in tracing and recalling of food products which had left food premises, but which had not yet been eaten. This would also enable environmental health officers/food safety officers to have an uninterrupted run of the premises to carry out investigations. Closure would also ensure no further sales of unsafe food.

## **Preliminary Hypothesis**

- 3.21 From the information gathered from case interviews, the laboratory and the visit to the potential source of infection if identified, it may be possible to form a working hypothesis about the cause of the outbreak and the degree of risk to the public health (control measures may be instituted at this point). It will then be for the CPHM(CD/EH) to decide whether an OCT should be set up and the investigation continued.

## **Communications**

- 3.22 The CPHM should contact FSA(S) in respect of any foodborne or suspected foodborne outbreaks as follows:
- a) For information when an Outbreak Control Team (OCT) is being established.
  - b) For information in respect of any serious incident.
  - c) Prior to the establishment of an OCT involving more than on NHSB.
- 3.23 Prior to the first OCT meeting the CPHM (CD/EH) should inform the DPH, General Manager of the NHSB, SCIEH, the relevant LA (through the EHO/FSO) and FSA(S) of the outbreak. General Practitioners (including relevant deputising services or out of hours co-operatives) and Medical Directors of NHS Trusts should also be alerted at an early stage and regularly updated on the situation.

The Press Officer of the NHSB/LA/FSA(S) should be alerted as soon as possible. The local Health Council should be kept informed of developments.

- 3.24 The general public will seek information and consideration should be given at an early stage to the establishment of a help line. Careful selection and full briefing of staff for help-lines or to deal with calls from the public is essential. This is particularly so if a public water supply is implicated.
- 3.25 In order to ensure full coverage of any statements or press releases intended to provide information or advice to the public, it may be necessary to buy space in the print media. The use of specially designed information leaflets may also need to be considered.
- 3.26 Where deaths have or are suspected to have arisen from foodborne illness the Procurator Fiscal will be involved and that involvement may give rise to criminal proceedings or a Fatal Accident Inquiry. The EHO/FSO should liaise with the Procurator Fiscal in order that the OCT can be kept briefed on all matters relevant to their task which have arisen through the Procurator Fiscal's enquiries.
- 3.27 The OCT should ensure that deaths resulting from foodborne illness are reported to the Procurator Fiscal.

### **Record Keeping**

- 3.28 Detailed recording of all aspects of the outbreak and its management must be carried out. The possibility of court action must always be borne in mind although at the early stages of an investigation this may not be evident.
- 3.29 Individual members of the OCT should keep personal daily logs of their activities, and include details of information received, conversations held and meetings attended.
- 3.30 All meetings of the OCT should be carefully minuted. Actions agreed and by whom should be clearly defined. Minutes and actions should be issued timeously and reviewed at the following OCT meeting.
- 3.31 All documentation, including computer generated information relating to the outbreak, must be retained and regular back-ups of electronically stored information made.

### **Media Liaison**

- 3.32 The considerable extent of public, media and political interest in recent outbreaks highlights the importance of paying careful attention to this aspect of outbreak management.
  - 3.32.1 There is a need, in large scale outbreak situations, for careful crisis management, including a clear and proactive media management and public relations strategy for the agencies involved.

In view of the crucial interface with the media the need for servicing the media (and informing the public) should be built into outbreak plans.

- 3.32.2 There are two important roles that require to be fulfilled, that of media liaison and that of acting as spokesman for the OCT. One person should be appointed by local agreement and clearly identified to liaise with the media, so that information is consistent. It is normally the CPHM (CD/EH) and an appropriate Press Officer agreed by the OCT. In outbreaks involving more than one area, it is important that there is liaison and co-ordination of action between those responsible in each area. Such liaison should include the FSA(S) media team.
- 3.32.3 To avoid confusion a common data set and timetable for compilation and issue of information to the media should be agreed and maintained throughout the incident.
- 3.32.4 By local agreement a media spokesman should be appointed and clearly identified. It will again normally be the CPHM (CD/EH) or the agreed Press Officer. If other professional opinions are sought from individual OCT members, these should not be given without full liaison with the CPHM (CD/EH). In some instances it may be desirable for other organisations to answer specific questions but, whenever possible, spokesmen should be members of the OCT.
- 3.32.5 It should be ensured that all individuals who may be called upon to act as spokesmen have appropriate media training. Very large outbreaks may place heavy demands on the OCT for statements and a number of individuals may be needed, albeit working from the same brief.
- 3.32.6 A decision should be taken about media briefing, and press statement, at each OCT meeting. In doing so, careful consideration should be given to:
  - the implications of releasing the information;
  - the implications of the timing of the release;
  - the importance of presenting complex information in simple language
  - and the different requirements of the print and broadcast media.
- 3.32.7 All Press Statements issued should be copied to the FSA(S), the Scottish Executive Health Department and other relevant and interested organisations. The core group of the OCT should agree the distribution list.

## **Confidentiality**

- 3.33 Individual clinical/food histories should be treated as medical records and handled with the same degree of confidentiality.
- 3.33.1 All members of the OCT should be fully appraised of the requirement for confidentiality at the outset of an outbreak and any subsequent cooptee's or new members of the OCT similarly appraised.
- 3.34 The protection of computer-held information is covered by the Data Protection Act 1998 and information on manual records may be subject to the Access to Health Records Act 1990.

## **Finance**

- 3.35 To ensure prompt and appropriate management of outbreaks NHSBs/LAs must ensure that they have necessary resources and contractual mechanisms in place. Investigations should never be delayed for financial or contractual reasons. To ensure resource issues are addressed speedily, the NHSB General Manager and LA Chief Executive should be informed of significant outbreaks at an early stage.
- 3.36 The NHS will retain responsibility for the costs of processing all samples associated with outbreaks of human illness including those taken for epidemiological purposes. However, this does not affect existing arrangements whereby NHS laboratories charge LAs for the routine testing of food, water and environmental samples. In the context of foodborne disease, those Scottish National Reference Laboratories (see paragraph 3.49) which are centrally funded do not charge Scottish users for their services.

# **THE MAIN INVESTIGATION**

## **Descriptive Epidemiology**

- 3.37 Some epidemiological information will have been gathered already in order to assess whether there is, indeed, an outbreak and to generate a working hypothesis.
- 3.38 Most outbreaks merit detailed description. As many cases as possible should be identified and detailed histories obtained. Information on cases is best recorded on data collection forms designed for the outbreak under investigation and will typically include
- name and address and telephone number
  - age and gender
  - occupation
  - household and other social contacts with similar illness
  - overseas travel

- date and time of onset of illness
- symptomatology
- severity and duration of illness
- times and places of food and drink consumed
- details of clinical care
- results of clinical sampling
- name and address of General Practitioner.

3.39 Information from individual cases should then be collated either manually or using a computer software package such as EPI INFO and

- an epidemic curve plotted
- symptomatology described
- range of incubation periods calculated
- incidence rates within the exposed population calculated.

3.40 The working hypothesis should then be re-considered and any alterations thought necessary made.

### **Microbiological Investigation**

3.41 It is essential to alert the clinical microbiologist and food examiner as early as possible in the investigation of an outbreak of suspected foodborne illness. In certain circumstances, the assistance of a virologist may also be required.

3.42 The role of the microbiologist is:

- to advise on appropriate clinical, food, water and environmental specimens, including sampling, transportation and storage.
- to perform, or arrange for, relevant microbiological investigations on samples.
- to liaise with the relevant reference laboratory and arrange for further identification and/or typing of isolates.
- to advise on further sampling in the light of initial results.
- to report and interpret results of microbiological analyses.

### **Appropriate Laboratory Use**

3.43 The rapid availability of accurate, consistent results of tests on cases and food samples is required by OCTs so that they can manage the outbreak effectively. OCTs should therefore, in discussion with a medical microbiologist, consider carefully the best use of laboratory resources available and by making appropriate use of experienced and appropriately accredited local laboratories, public health laboratories and reference laboratories try to ensure that the last of these in particular does not get burdened down with inappropriate work.

### **Clinical Samples**

- 3.44 The submission of faecal and other clinical samples should be a high priority in the early stages of an outbreak as some pathogens and most bacterial toxins are only found soon after the onset of illness. In addition, identification of the agent responsible may direct the sampling of food or environmental specimens. All specimens taken as part of an outbreak investigation must be identified with a reference number or outbreak code to distinguish them from other specimens and to facilitate the retrieval of computer data.
- 3.45 Other clinical samples for non-culture techniques may be helpful in the later stages if cultural techniques have failed to yield an organism (eg *E. coli* O157 infection).

### **Food Samples**

- 3.46 The statutory requirements applicable to food sampling and analysis and provisions of the relevant Code of Practice made under the Food Safety Act should be followed in respect of food sampling in connection with an outbreak of foodborne disease. LACORS guidance on food sampling provides useful advice.
- 3.47 It is recommended that an aide memoire is used to assist the food sampling process. An example is included as Appendix XIII.

### **Environmental Samples**

- 3.48 This may include swabs of surfaces, equipment, drains and sewers. The above advice regarding recording and labelling should apply. Where possible, advice should be obtained from the clinical microbiologist and food examiner.

### **Reference Laboratories**

- 3.49 In Scotland Reference Laboratories have been established to provide rapidly available specialised knowledge and expertise. In the context of foodborne diseases the recognised laboratories are the Scottish Reference Laboratory for Salmonella, for *E.coli* O157 and for parasitology. A primary remit of these laboratories is to demonstrate the relatedness or otherwise of commonly occurring foodborne pathogens by techniques not practicable in local laboratories. The appropriate reference facilities for specific organisms are listed in Appendix XI.

### **Chemical Analysis**

- 3.50 In chemical foodborne disease incidents the analysis of food(s) involved is usually carried out by the Public Analyst. Advice on toxicology can be obtained from the National Poisons Information Service (Scottish Poisons Information Bureau). In large or difficult incidents further expert advice may be obtained through FSA(S) or SCIEH.

- 3.51 It is important that arrangements for chemical analysis are included in any Outbreak Control Plan and that the analyst and/or toxicologist are invited to join the OCT as appropriate.

### **Veterinary Investigation**

- 3.52 Where it appears that an animal source may be implicated in the outbreak, veterinary advice and information should be sought. Assistance may be provided by the local Divisional Veterinary Manager of the SVS, the Senior Veterinary Investigation Officer of the appropriate SAC Veterinary Services Laboratory and the Consultant in Veterinary Public Health at SCIEH. Between these 3 groups it should be possible to identify flocks and herds that are potentially involved and arrange investigation where appropriate.

### **Analytical Epidemiology**

- 3.53 Any analytical epidemiology to be done will normally be undertaken by the CPHM (CD/EH) who has training in study design and interpretation of results. Advice and practical assistance may be provided by SCIEH.
- 3.54 The most commonly used type of study is the cohort study which is used when a group of people exposed to a particular risk can be identified (see example at Appendix IX). Case-control studies are used when this is not possible or when the population at risk is so large in relation to the number ill that it is not practical or cost effective to include them all in the study (see example at Appendix X).

### **Interpretation of Results**

- 3.55 The results of analytical epidemiology, microbiological and environmental findings, and previous knowledge of the disease must be considered together. Each on its own may be misleading. A positive component of a suspect food, or finding the organism in the environment where a food was manufactured is compelling evidence, but is not definitive. The findings may be coincidental - and the commoner the pathogen the more likely the coincidence.
- 3.56 Similarly, analytical epidemiology alone, although valuable, only indicates a statistical association between illness and the consumption of a suspect food. In order for that association to be considered causal, other criteria must be met:
- there must be no evidence of bias in the choice of cases or non-cases, or as the result of a poor response rate;
  - the time relationship between the consumption of the suspect food and the onset of illness must be consistent with the incubation period of the disease;

- the association must be strong enough for mere coincidence to be reasonably excluded. By convention, if an epidemiological study seeks to establish a link with a single food, then if the association is so strong that it would only occur 5 times or fewer in a hundred ( $p=0.05$ ) then the association is deemed to be real, rather than coincidence. If more than one food is suspect, the p-value must be lower for coincidence to be safely ruled out.

### **Control**

- 3.57 Specific control measures required for individual outbreaks will vary and may be directed at the source or vehicle of infection and/or the infected persons.

### **Product Recall**

- 3.58 As soon as there is reasonable suspicion, which may fall well short of scientific proof, that food premises are involved in a serious outbreak, then the utmost priority should be given to the recall of unconsumed produce and this should not be confined to commercial premises. Every reasonable step should be taken to let domestic customers as well as trade know when an outbreak occurs. Time is clearly of the essence of operation. The initial recall should be as large as it requires to be to ensure that contaminated food is removed from the food chain.
- 3.59 A checklist of some of the issues which need to be considered in relation to product recalls is included at Appendix XIV. This list is not exclusive and each case needs to be considered on its own merits. All appropriate action taken in relation to the product recall should be fully documented.

### **Exclusion of Infected People from Work and School**

- 3.60 The degree of risk of spreading infection posed by infected individuals is influenced by their clinical state and their standards of hygiene. Persons with diarrhoea present a far greater risk of spreading infection than do known symptom-free excreters but even symptom-free excreters with poor or doubtful standards of personal hygiene pose a potential risk. Clinically well excreters with normal formed stools and good personal hygiene standards pose minimal risk.
- 3.61 **All persons with diarrhoea should be advised to remain off work or school until 48 hours after clinical recovery.**
- 3.62 Particular persons have, however, been identified who pose a special risk of spreading infection and these persons may in some circumstances be excluded from attending work or school until they clear the infecting organism. These groups are:-
- Group A:** Any person of doubtful personal hygiene or with unsatisfactory toilet, hand-washing or hand drying facilities at home, work or school.

- Group B:** Children, who attend pre-school groups or nursery.
- Group C:** People whose work involves preparing or serving unwrapped foods not subjected to further heating.
- Group D:** Clinical and social care staff in high risk care facilities who have direct contact with highly susceptible patients or persons in whom a gastrointestinal infection would have particularly serious consequences.

3.63 Each case should be considered individually taking into account:-

- the infecting organism and its infectivity.
- the age, intellectual acumen and hygiene standard of the excreter.
- the exact nature of the work.

Guidance on exclusion criteria for particular diseases is contained in Chapter 4.

3.64 Exclusion of symptom-free contacts other than those of typhoid or paratyphoid fever is seldom justified but advice on the necessity for good personal hygiene should be given particularly if contacts fall into any of the risk groups.

3.65 The DMO has statutory powers to exclude cases, contacts of cases or carriers of infection from work or school. DMOs advise the LAs on exclusion policies.

### **The End of the Outbreak**

3.66 The OCT has to decide when an outbreak is over and when a statement can be made that there is no longer a risk to the public health.

3.67 A debriefing meeting of the OCT should be convened to consider lessons learned and any further preventive action required.

3.68 A standard summary form should be completed and forwarded to SCIEH.

3.69 It is good practice for a full report to be prepared and agreed by the OCT to be made available to appropriate individuals and the NHSB, LAs, SCIEH, FSA(S), Scottish Executive, and other interested parties. Such a report should, in addition to describing the outbreak, consider the effectiveness of the investigation and the control measures taken. A template for the production of a final report is recommended in Appendix XV.

3.70 It may in some cases be necessary to delay or limit reporting pending legal action. In view of the increasing incidence of litigation members of the OCT should be careful to address the probability of doubt that a particular vehicle was the source and take great care in wording statements to that effect.

## CHAPTER 4

### FEATURES OF FOODBORNE DISEASE

#### Microbiological Foodborne Disease

4.1 Consideration of the presenting symptoms, the time of onset, and duration of illness together with the possible food source may indicate the most likely cause of illness and what further investigation is required.

4.2 The following microbiological agents are commonly foodborne:-

1. *Bacillus cereus*
2. *Campylobacter jejuni*
3. *Clostridium botulinum*
4. *Clostridium perfringens*
5. *Salmonella spp.*
6. *Staphylococcus aureus*
7. Verocytotoxin producing *E. coli* (VTEC)
8. *Vibrio parahaemolyticus*

The following may be foodborne:-

9. *Aeromonas spp.*
10. *Brucella abortus*
11. *Coxiella burnetti*
12. *Cryptosporidium spp.*
13. *Enteraggregative E.coli*
14. Enteropathogenic *E. coli* (EPEC)
15. Enterotoxigenic *E. coli* (ETEC)
16. *Giardia duodenalis (lamblia)*
17. Hepatitis A virus
18. *Listeria monocytogenes*
19. *Salmonella typhi* and *Salmonella paratyphi*
20. *Shigella (sonnei, flexneri, boydii, dysenteriae)*
21. *Vibrio cholerae*
22. Small round structured viruses (SRSVs) including Norwalk like virus
23. *Yersinia enterocolitica*

4.3 Although positive identification of the causative microbiological agent is dependent on laboratory testing, consideration of

- the incubation period
- symptomatology
- duration of illness
- food exposure history

together may indicate the likely cause.

- 4.4 Tables I and II summarise the clinical features of the main types of foodborne disease, the commonly associated foods, and the recommended clearance standards for symptom-free cases returning to work or school (see paragraphs 3.60-3.65).

### **Chemical Foodborne Disease**

- 4.5 Table III below lists a selection of Foodborne diseases caused by chemicals which may result from:-

- accumulation of naturally occurring organic or inorganic chemicals;
- the addition of chemicals;
- the accidental ingestion of toxic species;
- inadequate preparation of food;
- accidental or malicious contamination.

### **Microbiological Waterborne Disease**

- 4.6 Many microbiological agents have been recognised as capable of being transmitted by water. They are usually present in large numbers in human or animal excreta or both, and are relatively resistant to environmental decay. Many are likely to cause infections if ingested in small numbers. The microbiological agents discussed are confined to those acquired by ingestion and no consideration given to transmission of infection by inhalation. The following microbiological agents can be waterborne.

#### **Bacteria**

*Campylobacter species*  
*Escherichia coli* (certain types for example VTEC)  
*Salmonella species* (including *S.typhi*)  
*Shigella species*  
*Streptobacillus moniliformis*  
*Vibrio species* (including *V. cholerae*)

#### **Protozoa**

*Balantidium coli*  
*Entamoeba histolytica*  
*Giardia duodenalis*(*lamblia*)  
*Toxoplasma Gondii*  
*Cryptosporidium*

#### **Viruses**

Hepatitis A virus  
Hepatitis E virus  
Norwalk Like Virus  
Rota viruses

The following micro-organisms causing enteritis are known to be present in human and animal excreta and therefore have the potential to cause waterborne infections although for most of these agents very little evidence exists.

*Aeromonas group*

*Bacillus cereus*

*certain clostridia*

*Plesiomonas shigelloides*

*Yersinia enterocolitica*

*Cyclospora, Isospora and microsporidium species*

- (+) some enteric viruses (eg astroviruses, caliciviruses, coxsackieviruses and echoviruses)
  
- (+) certain enteroviruses belonging to the poliovirus and Coxsackievirus groups have occasionally been isolated in small numbers from drinking water but there is no evidence that illness has resulted. Also these viruses only replicate in living host cells therefore no increase in numbers will occur in the environment.

**TABLE I: COMMON MICROBIOLOGICAL FOODBORNE DISEASES**

<b>Causative Agent/Illness</b>	<b>Main Clinical Features</b>	<b>Incubation Period</b>	<b>Duration of Illness</b>	<b>Commonly Associated Foods</b>	<b>Exclusion After Clinical Recovery</b>
<i>Bacillus cereus</i>	severe vomiting abdominal pain and diarrhoea	1-5 hours 8-16 hours	<24 hours <24 hours	Rice, pasta, cereals	Not appropriate
<i>Campylobacter spp</i> (campylobacteriosis)	abdominal pain and profuse diarrhoea, may be blood in stools headache fever	1-10 days usually 3-5 days	2 days - 1 week	Poultry, cooked meats, Milk and milk products	None necessary
<i>Clostridium botulinum</i> (botulism)	visual disturbance dry mouth difficulty in swallowing paralysis respiratory failure	2 hours-5 days, usually 12-36 hours (dose dependent)	may persist for 6 months	Preserved foods canned, vacuum packed	Not appropriate
<i>Clostridium perfringens</i>	colic and diarrhoea	6-24 hours usually 10-12 hours	24 hours	Stews, rolled roasts, stovies, pies	Not appropriate
<i>Salmonella spp</i> (salmonellosis)	Abdominal pain and diarrhoea Fever nausea, maybe vomiting	6-72 hours usually 12-36 hours	Few days - 3 weeks	Poultry, eggs, meats Poultry, egg and meat products	* 2 consecutive negative stools at 24 hours minimum interval for groups A&B.

<i>Staphylococcus aureus</i>	vomiting, abdominal cramps, diarrhoea	2-6 hours	< 12 hours - 2 days	Cooked meats, poultry	Not appropriate for faecal excreters. <u>Note:</u> Nasal carriers need only be excluded if implicated as the source of an outbreak.
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\* Some asymptomatic young children may excrete this organism for more than 4 weeks. In these cases, the CPHM must do a risk assessment on the continued need for exclusion and the possible consequences of this action.

**TABLE I: COMMON MICROBIOLOGICAL FOODBORNE DISEASES (CONTINUED)**

<b>Causative Agent/Illness</b>	<b>Main Clinical Features</b>	<b>Incubation Period</b>	<b>Duration of Illness</b>	<b>Commonly Associated Foods</b>	<b>Exclusion After Clinical Recovery</b>
Verocytotoxin producing <i>Escherichia coli</i> (VTEC) including <i>E. coli</i> O157	Abdominal pain and diarrhoea haemorrhagic colitis (bloody diarrhoea) haemolytic uraemic syndrome	uncertain, usually 12-60 hours, but may be 1-10 days (average 3 days)	Variable	Ground meat and meat products Milk and milk products Contaminated water	**2 consecutive negative stools at 24 hours minimum interval for groups A, B, C and D. Exceptionally, criteria may be varied at the discretion of the CPHM following an individual or outbreak risk assessment.
<i>Vibrio parahaemolyticus</i>	abdominal pain and watery diarrhoea maybe headache, vomiting and fever	4-96 hours usually 12-24 hours	up to 7 days	Shellfish	None necessary

\*\* Contacts in Groups A, B, C and D should also be excluded until they have 2 negative stools at 24 hours interval (see paragraph 3.61)

**TABLE II: DISEASES WHICH MAY BE FOODBORNE**

<b>Causative Agent/Illness</b>	<b>Main Clinical Features</b>	<b>Incubation Period</b>	<b>Duration of Illness</b>	<b>Commonly Associated Foods</b>	<b>Exclusion After Clinical Recovery</b>
<i>Aeromonas spp.</i>	watery diarrhoea mild fever	1-7 days	Variable	Shellfish	None
<i>Brucella abortus</i> (brucellosis)	undulant fever lassitude myalgia weight loss	usually 5-30 days	Variable	Milk	None
<i>Coxiella burnetti</i> (Q fever)	Headache Chills Weakness chest pain and cough	2-3 weeks	Variable	Milk	None
<i>Cryptosporidium spp</i> (cryptosporidiosis)	cramping pain and diarrhoea	probably 1-2 weeks	1-3 weeks	Water	None
Enteropathogenic <i>Escherichia coli</i> (EPEC) (infantile gastroenteritis)	vomiting, diarrhoea	9-12 hours	Up to 2 weeks	More common in infants fed artificially	None
Enterotoxigenic <i>Escherichia coli</i> (ETEC) ("travellers' diarrhoea")	acute watery diarrhoea, dehydration, shock	10-72 hours	1-5 days	-	None
<i>Giardia duodenalis</i> ( <i>lamblia</i> ) (giardiasis)	abdominal pain and diarrhoea	4-25 days usually 7-10 days	Variable	Water	None

**TABLE II: DISEASES WHICH MAY BE FOODBORNE (CONTINUED)**

<b>Causative Agent/Illness</b>	<b>Main Clinical Features</b>	<b>Incubation Period</b>	<b>Duration of Illness</b>	<b>Commonly Associated Foods</b>	<b>Exclusion After Clinical Recovery</b>
Hepatitis A Virus (Hepatitis A)	Malaise loss of appetite nausea jaundice	15-50 days	Up to 4 weeks	Shellfish, water	7 days from onset of jaundice
<i>Listeria monocytogenes</i> (Listeriosis)	flu-like illness meningitis abortion/premature labour	usually 3-21 days (may be longer)	Variable	Milk, milk products, meat patés	None
<i>Salmonella typhi</i> <i>S. paratyphi</i> (enteric fever)	persistent fever with rigours rash variable gastro-intestinal symptoms	Usually 12-20 days but may be 3-56 days	10-14 days	Foods/water contaminated by a case or carrier	*Group C 6 consecutive negatives at 2 weekly intervals starting 2 weeks after antibiotic treatment completed. Groups A, B and D 3 consecutive negative stools at weekly intervals after recovery

<i>Shigella sonnei</i> <i>flexneri, boydii, and</i> <i>dysenteriae</i> (bacillary dysentery)	diarrhoea, fever, abdominal pain	1-7 days (usually 1-3 days)	Up to 2 weeks	Foods/water contaminated by a case or carrier	Shigella sonnei Groups A&B Exclude at discretion of CPHM. 2 consecutive negative stools at 24 hours minimum interval.  Shigella flexneri, boydii and dysenteriae Groups A, B, C and D 2 consecutive negative stools at 24 hours minimum interval.
<i>Vibrio cholerae</i> 01 (cholera)	profuse watery diarrhoea rapid dehydration circulatory collapse	Few hours - 5 days (usually 2- 3 days)	Up to 7 days	Water, shellfish	Groups A, B, C, D 2 consecutive negatives at 24 hours intervals
<i>Vibrio cholerae</i> non-01 (gastroenteritis)	Diarrhoea	Few hours- 5 days (usually 2- 3 days)	Up to 7 days	Water, shellfish	None

\* Contacts in Groups A, B, C and D must be excluded until they have 3 negative stools at 48 hour intervals beginning 3 weeks after last contact with untreated case.

**TABLE II: DISEASES WHICH MAY BE FOODBORNE (CONTINUED)**

<b>Causative Agent/Illness</b>	<b>Main Clinical Features</b>	<b>Incubation Period</b>	<b>Duration of Illness</b>	<b>Commonly Associated Foods</b>	<b>Exclusion After Clinical Recovery</b>
<i>Yersinia enterocolitica</i>	diarrhoea, severe pain, low grade fever	3-7 days	1-3 weeks	Pork, pork products	None
Norwalk like virus, adenoviruses, coronaviruses, astroviruses	Vomiting Pain diarrhoea fever chills	4-48 hours	1-2 days	Shellfish	None necessary

**TABLE III: CHEMICAL FOODBORNE ILLNESS**

<b>Causative Agent/Illness</b>	<b>Main Clinical Features</b>	<b>Incubation Period</b>	<b>Duration of Illness</b>	<b>Associated Foods</b>
<i>Amanita verni</i> <i>A. phalloides</i> <i>A. virosa</i>	Colic, nausea, vomiting, diarrhoea Liver and/or kidney failure 20-90% mortality	6-48 hours	1-30 days	Mushroom-like fungi
<i>Amanita muscaria</i> <i>A. pantherina</i> (mushroom poisoning)	similar to alcoholic intoxication muscle twitches, visual disturbances, hallucinations	30 minutes - 3 hours	Usually <12 hours	Mushroom-like fungi
<i>Aspergillus flavus</i> <i>Aspergillus parasiticus</i> (aflatoxicosis)	vomiting, diarrhoea, fever, convulsions, hepatic and renal failure	8 hours (average)	>10 days	Cereal crops Grains Nuts
Heavy metals - antimony, copper, lead, zinc (Heavy metal poisoning)	Gastro-intestinal symptoms combined with metallic taste in mouth	Variable	Variable	Acid-foods stored in metal containers
Monosodium glutamate	Burning sensation, tightness in chest, flushing, headache, nausea	Few minutes - 1 hour	Variable	Flavour intensified foods
<i>Gonyaulax</i> spp producing Saxitoxin (Paralytic shellfish poisoning) (PSP)	Tingling, burning, numbness, giddiness, drowsiness, paralysis, sometimes respiratory paralysis	30 minutes - 2 hours	Dose dependent	Shellfish and crustaceans
<i>Prorocentrum</i> and <i>Dinophysis</i> spp, producing okadaic acid (diarrhetic shellfish poisoning) (DSP)	Diarrhoea and abdominal pain Nausea and vomiting	30 minutes - 12 hours	3-4 days	Shellfish and crustaceans

**TABLE III: CHEMICAL FOODBORNE ILLNESS (CONTINUED)**

<b>Causative Agent/Illness</b>	<b>Main Clinical Features</b>	<b>Incubation Period</b>	<b>Duration of Illness</b>	<b>Associated Foods</b>
Bacterial spoilage of scombroid and other fish producing histamine (scombrototoxin food poisoning)	Flushing, sweating, headache. Diarrhoea and nausea. Tachycardia Urticaria	Few minutes - 2 hours	6-24 hours	Mackerel, tuna
Phytohaemagglutinin	Nausea and vomiting abdominal pain and diarrhoea	30 mins - 12 hours (approximately)	3 hours - 6 days	Red Kidney Beans
Solanine and chaconine	Vomiting and diarrhoea fatigue and muscle weakness headache	30 mins - 12 hours (approximately)	3 hours - 6 days	Green or sprouting Potatoes

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Dr A F MacLeod (Medical Secretary)	Senior Medical Officer SODoH
Dr P Madden	Senior Medical Officer SODoH

## LEGISLATION

### **The Public Health (Notification of Infectious Diseases) (Scotland) Regulations 1988**

- Regulation 3                    -    Medical practitioners to notify CAMO of cases of food poisoning on specified form.
- Regulation 4                    -    CAMOs to make weekly return to CSA.
- Regulation 5                    -    CAMOs to notify CAMO for area of residence of case.
- Regulation 6                    -    CAMO to report serious outbreaks to Chief Medical Officer.
- Regulation 7                    -    Confidentiality of forms.
- Schedule 1 (Part 1)           -    Food Poisoning listed as Notifiable Disease.

### **National Health Service (Scotland) Act 1978**

- Section 13                    -    Co-operation of NHSBs and LAs.
- Section 14                    -    Designation of medical officers for LAs.

### **Health Services and Public Health Act 1968**

- Section 71(1)                -    Food poisoning cases to discontinue work.
- Section 71A                    -    NHSB to pay fees for notification by medical practitioner.
- Section 71(2)                -    LA to compensate for loss.
- Section 72(1) and 72(2)                -    Sheriff's power in the interest of public health to have persons suspected of suffering from infectious disease medically examined.
- Section 73(1)                -    Right of DMO to enter premises.

### **Public Health (Scotland) Act 1897**

- Section 3(1)(a)              -    Where human infectious disease is found in any building, the head of the family, nearest relative, the occupier of the building or the person in attendance shall notify the CAMO.
- Section 57                    -    Prohibition on children who may spread infection attending school.

Section 58 - Prohibitions on infected persons carrying on business.

### **FOOD LAW**

For a resume of relevant related legislation see Food Law in Scotland produced by the FSA(S).

Available on the Website at: [www.food.gov.uk](http://www.food.gov.uk) under Scotland then Regulations.

### **Water Supply (Water Quality)(Scotland) Regulation 1990**

Schedule 4 - Water Authorities' reporting requirements for microbiological and physico-chemical standards of drinking water.

### **Private Water Supplies (Scotland) Regulations 1992**

### **Animal Health Act 1981**

Section 1 - Notifiable diseases, eg brucellosis, anthrax, bovine tuberculosis.

### **Zoonoses Order 1989**

- Responsibilities of SVS for enforcement.

## **ROLES OF THE FOOD STANDARDS AGENCY (SCOTLAND) AND THE SCOTTISH EXECUTIVE HEALTH DEPARTMENT IN MANAGING FOOD RELATED EMERGENCIES IN SCOTLAND**

### Introduction

The Food Standards Agency's principal aim is the protection of public health in relation to food. The Food Standards Agency is a UK wide non ministerial government department.

The Scottish Executive Health Department's (SEHD) aim is the improvement of the health and quality of life of the people of Scotland. SEHD have overall responsibility for strategy and programmes related to communicable diseases as part of their wider responsibility for protecting public health.

The FSA(S) and SEHD will inform each other immediately in the event of an emergency, or potential emergency which may have an impact on each other's responsibilities. They are also committed to working closely together to ensure that any emergency is dealt with effectively, and agree to co-operate fully on any action required. The Food Standards Agency and the Scottish Executive will work jointly to review and develop guidelines for handling outbreaks of foodborne infections and other food related incidents which have an impact on human health. The FSA(S) will maintain the contact information list in the guidance document and on a 6 monthly basis request the agencies to update their information and issue amendments accordingly.

## THE ROLE OF SCIEH IN THE INVESTIGATION AND CONTROL OF OUTBREAKS OF FOODBORNE DISEASE

### Introduction

SCIEH is the national centre responsible for providing surveillance information in Scotland, as well as expert advice on the control and prevention of illness in all matters relating to infection and environmental health.

SCIEH's duties include the collection, analysis and dissemination of information on laboratory reports and outbreaks of infectious intestinal disease, including foodborne disease.

SCIEH can assist with the co-ordination of the investigation and control of outbreaks which cross geographical or organisational boundaries, and provide a mechanism for the collection, collation and dissemination of information from the different areas involved. It may also, where appropriate, provide expertise to assist at NHSB level, but always at the invitation of the local agencies with whom final responsibility rests.

In order to carry out these duties SCIEH has close links with medical and veterinary diagnostic and reference laboratories, CsPHM, EHOs/FSOs, FSA(S) and Scottish Executive, as well as similar national institutions in other countries.

SCIEH should be contacted urgently if a serious or widespread outbreak is suspected, or when an unusual organism, or epidemiological pattern is detected. SCIEH may then be able to provide information about the epidemiology of the organism and, through its co-ordinating role, identify the wider significance of an outbreak.

Whenever the decision is made for an OCT to be established the CPHM involved should inform SCIEH and may invite them to be involved with the local OCT. The question of active involvement in an OCT will be a mutual decision between SCIEH and the OCT core group.

### Recognition of outbreaks

CsPHM and EHOs/FSOs may inform SCIEH of general outbreaks in their area. Reports may also be received from clinical and reference laboratories. The surveillance of laboratory reports and notifications of sporadic cases may enable SCIEH to detect national or regional outbreaks not apparent locally. Liaison with relevant organisations in other parts of the UK and abroad may alert SCIEH to international outbreaks which may involve Scotland.

## **Surveillance of outbreaks**

As well as being informed promptly of outbreaks causing concern, SCIEH should be told of all outbreaks involving more than one household. This initial information will prompt SCIEH to send a summary report form to the appropriate CPHM to be completed and returned at the end of an investigation. If a full investigation report based on the template has been prepared locally, a copy should be sent to SCIEH with the completed summary report form.

## **Action by SCIEH**

Action by SCIEH falls under two headings: first the provision of assistance and expertise, and secondly the provision of surveillance information. When requested by local public health professionals SCIEH will provide epidemiological and environmental health support. In addition, even when not directly involved, SCIEH will collate and analyse surveillance data submitted to it to produce information output for those who provide the information, and others with a legitimate interest. Information input, and output, will be agreed between all involved.

## **Enter-net**

The Enter-net project is an international surveillance network for salmonella and vero-cytotoxin producing *Escherichia coli* O157 (VTEC). Its main objectives are to maintain an international database on selected enteric pathogens to aid in the identification and investigation of international outbreaks of disease. Participants are microbiologists and epidemiologists from all 15 states of the European Union, plus Norway and Switzerland, Canada and Japan.

## THE FOOD HAZARD WARNING SYSTEM

1. The Food Hazard Warning System is operated by the Food Standards Agency. Code of Practice No. 16 (Revised August 1997) made under section 40 of the Food Safety Act 1990 describes in detail how the system operates and the various actions which need to be taken by both the food authorities and central Government Departments. Essentially, it is a mechanism for informing both the public and enforcement authorities of any potential food safety problems which have national significance, or, at the very least, a significance which goes beyond the boundaries of an individual food authority. Certain serious incidents, such as botulism, should always be reported to the FSA(S).
2. The food authority should decide, liaising with appropriate experts as necessary, the likely scale, extent and severity of the risk to health and whether the problem constitutes:
  - 2.1 an outbreak of foodborne illness;
  - 2.2 a food hazard;
  - 2.3 both an outbreak of foodborne illness and a food hazard;
  - 2.4 none of these.
3. If the problem is a food hazard or is both an outbreak of foodborne illness and a food hazard the food authority, again in liaison with other experts as necessary, will need to determine whether the hazard is:
  - 3.1 a Localised Incident - one in which food is not distributed beyond the boundaries of a food authority and is NOT a Serious Localised Incident;
  - 3.2 a Serious Localised Incident - one in which food is not distributed beyond the boundaries of a food authority but which involves *E.coli* O157, other VTEC or *Cl.botulinum*; or which the food authority may consider significant because of, for example, the vulnerability of the population likely to be affected, the numbers involved or any deaths associated with the incident;
  - 3.3 a Wider Problem - one in which food is distributed beyond the boundaries of a food authority.
4. In the event of a Localised Incident food authorities should decide on the action to be taken locally and consult relevant experts as necessary. Procedures should be in place for food authorities to call together the appropriate experts at short notice, and local procedures should recognise that in certain circumstances urgent control measures may be required. Control actions initiated should be commensurate with the risk of injury to health.

5. In the event of a Serious Localised Incident or a Wider Problem the food authority should notify the FSA(S) immediately. The FSA(S) will liaise with appropriate food authorities on further action to be taken. Responsibility for action at local level will however continue to remain with the food authority (and the health authority/board) as determined by local plans.
6. Each year, FSA(S), in conjunction with other Government Departments, investigates a number of reported incidents. The risk to public health is assessed and action taken based on the best information available at the time. In most cases, the food producer or importer will volunteer to withdraw the food and this is monitored by the local enforcement authority or authorities.
7. Action may be required outside normal office hours and procedures are in place to enable urgent action to be taken if necessary on a 24 hour basis. All food authorities have a list of names and telephone numbers of contacts within FSA(S) for use outside office hours.
8. The formal Food Hazard Warning System is implemented when there is a need for national action to inform the public or the food authorities or for the withdrawal of large quantities of food.

FSA(S) issues a Food Hazard Warning indicating action to be taken, which may involve:

- 8.1 alerting all food authorities and National Health Service Boards to the food hazard;
  - 8.2 withdrawing the suspect food from sale. The import, manufacture or distribution of the product can also be stopped until detailed investigations take place;
  - 8.3 informing the producer or importer of the risk and of the legal obligations under The Food Safety Act 1990 regarding the sale of food which is unfit, unsound or unwholesome, and advising the public through the media of the food hazard and any action they should take.
9. Food Hazard Warnings are issued by fax and electronically using the EHCnet for Scotland or other means as appropriate.

## OUTBREAK CONTROL TEAM MEETING

### DRAFT AGENDA

1. Introduction and reminder of “confidentiality”
2. Declarations of conflicts or vested interests.
3. Minute of last meeting (if applicable) including review of actions agreed at previous meeting
4. Outbreak Resume/Update
  - 4.1 General situation statement
  - 4.2 Patient(s) report
  - 4.3 Microbiological report
  - 4.4 Environmental Health report
  - 4.5 Other relative report eg Control of Infection Nurse, Vets etc
5. Management of Outbreak
  - 5.1 - Control Measures
    - patient(s)
    - general (eg EHO/FSO inspection of premises, closure of premises, withdrawal of food),
    - Public Health (exclusion/clearance)
  - 5.2 Care of Patients - Hospital
    - Community
  - 5.3 Investigation
    - inspection
    - epidemiological
    - microbiological aspects (specimens and resources)
    - case definition
6. Advice to public (as press releases)  
Advice to professionals (GPs, hospital doctors, nurses, other National Health Service Boards etc)
7. Agree content of press releases (Sub group probably required) and press arrangements
8. Nominate others to assist CPHM in interviews (if required)
9. Consider need for Helpline or arrangement for enquiries from the public

10. Obtain telephone numbers of all key personnel within and outwith hours
11. Agree actions required and a timetable for action. Identify individuals responsible for delivering actions as agreed.
12. Date and time of next meeting

## THE INVESTIGATION AND CONTROL OF AN OUTBREAK

### CHECK LIST

[Source: Management of Outbreaks of Foodborne Illness: Department of Health, December 1994]

This step-by-step approach to the investigation of an outbreak is not meant to imply that each action must follow the one preceding it or that all steps are needed on every occasion. In practice some steps will be carried out simultaneously and others, for example, communication and collation of data, will be required throughout the whole process.

#### *Preliminary Phase*

- Consider whether or not the cases have the same illness and establish a tentative diagnosis;
- Determine if there is a real outbreak;
- Collect specimens and consider informing local GPs;
- Conduct in-depth interviews with initial cases;
- Identify factors common to all or most cases;
- Conduct site investigation at implicated premises;
- Consider formal requests for information;
- Form preliminary hypothesis;
- Consider if there is a continuing public health risk;
- Initiate immediate control measures;
- Decide whether to convene a formal outbreak control group;
- Make decision about the need for further investigation;
- Inform SCIEH, if outbreak appears significant;
- Inform FSA(S) if food and SEHD if non food (if in doubt inform both);
- Consider need to formally seek legal advice.

### *Communication*

- Consider best routes of communication with colleagues, patients and the public;
- Ensure accuracy and timeliness;
- Include all those who need to know;
- Use the media constructively;
- Prepare written report for local use and for SCIEH.

### *Descriptive Epidemiology*

- Draw up lists of those at risk;
- Identify persons posing a risk of further spread;
- Establish a case definition;
- Identify as many cases as possible;
- Collect data from affected persons on standardised questionnaire.

### *Analysis and interpretation*

- Calculate attack rates;
- Confirm factors common to all or most cases;
- Categorise cases by “time, place or person” associations;
- Construct epidemic curve;
- Review all existing data;
- Review hypotheses;
- Collect further clinical and food specimens for laboratory tests;
- Carry out analytical epidemiological study;
- Ascertain source and mode of spread.

### *Control measures*

- Control the source: animal, human or environmental;
- Control the mode of spread;

- Protect persons at risk;
- Continue surveillance of control measures;
- Declare the outbreak over (usually) when the number of new cases has returned to background levels.

*Further studies*

- Conduct further analytical case/control or cohort studies;
- Conduct further microbiological studies.

*Conclusion of OCT*

- Produce final report on outbreak. (See template Appendix XV)

## COHORT STUDY: AN EXAMPLE

This example is based on an actual outbreak.

In August 1993, 21 of 157 children from the same primary school were admitted to hospital with diarrhoea. Descriptive epidemiology showed that a further 47 children had been ill. In-depth interviews suggested that the outbreak was probably foodborne, and that a butter coconut tart might be the vehicle of infection. As well as the microbiological and environmental investigations, an analytical epidemiological study was carried out to test the hypothesis that consumption of the tart was associated with the illness.

As the hypothesis was that the vehicle of infection was the coconut tart served at lunch on Monday 23rd August 1993, the cohort defined for investigation consisted of those pupils and staff who had eaten school lunch on the day the tart was served. If the hypothesis had been less specific - for example that the school lunch as a whole was to blame - then the cohort would have had to include all pupils and staff who may have had lunch. To include them all in testing the more restricted hypothesis would be inappropriate, and could lead to confounding. The members of the cohort must be chosen to include those with a similar opportunity for exposure, and exclude those without that opportunity. If such a group cannot be defined, a cohort study is probably inappropriate.

A standard questionnaire, designed specifically for this outbreak, eliciting demographic details and clinical histories, as well as food histories, was obtained from 177 (87%) of the pupils and staff who ate school lunch. It should be noted that all members of the cohort, irrespective of their health, received the same questionnaire. The members were appropriately selected because of their opportunity of exposure, not on the presence or absence of illness.

The case definition was in two parts, and was used to divide the cohort into suspected cases, confirmed cases and non-cases, without reference to whether they had consumed the tart or not. A suspected case was someone reporting illness after consumption of the suspected school lunch: confirmed cases had, in addition to illness and consumption of the lunch, *Salmonella* group D (subsequently identified as *Salmonella enteritidis* phage type 4) identified in their stool. There were 45 cases confirmed and 23 suspected.

In this study, responses from confirmed and suspected cases were included as 'ill': in outbreaks where the microbiology has not been confirmed (say of Small Round Structured Virus infection) then it may be appropriate to use a purely clinical case definition; in others a purely microbiological definition may be required.

The analysis was carried out using the free software, EpiInfo 5.01, giving the results in the table.

## Food Specific Attack Rates

Food	ATE			DID NOT EAT			P Value
	Ill	Total	AR%*	Ill	Total	AR%*	
Savoury Mince	25	28	92%	41	84	49%	0.0003
Potato Mince							
Croquettes	8	8	100%	57	103	55%	0.02(ns)
Sauce/Gravy	3	8	38%	62	103	60%	0.26(ns)
Gold Veg Soup	3	5	60%	62	106	58%	0.66(ns)
Baked Potato	7	9	77%	58	102	57%	0.303(ns)
Turnip	3	3	100%	62	108	57%	0.26(ns)
Potatoes	23	24	96%	43	88	49%	0.0001
Butter Coconut							
Tart	45	46	98%	20	65	31%	0.0000001
Banana Mousse	2	4	50%	63	107	59%	0.545(ns)
Custard	22	26	85%	43	85	51%	0.003
Beefburger	9	14	64%	56	97	58%	0.88(ns)

The hypothesis was that butter coconut tart was the vehicle of infection, but because the test for statistical significance was applied to 11 food dishes, the conventional level of statistical significance - that a result should be likely to occur no more often than five times in a hundred - was made stricter by a factor of 11.

When this was done only a small number of vehicles were statistically associated with becoming ill: by far the strongest association was with the consumption of coconut tart. Further analysis on those who had, and those who had not, eaten the coconut tart, demonstrated that the other apparently (although less strongly) associated dishes were not themselves implicated.

Although not part of the statistical argument, the fact that this hypothesis explains more of the cases than any other is strongly supportive, especially when backed up by the microbiological and environmental evidence.

This study illustrates some of the cardinal points of a successfully conducted cohort study:

1. The outbreak was identified by routine surveillance.
2. In depth interviews with cases lead to the formation of a hypothesis.
3. The hypothesis was tested by means of a cohort study.

4. Subjects for the study were chosen on the basis of their possible exposure to the proposed risk factor, and information on this and the presence or absence of illness obtained by standard questionnaire.
5. Appropriate statistical tests confirmed the hypothesis.

The statistics must, as always be viewed in the context of the biological plausibility of the hypothesis, and supported, where possible, by microbiological and environmental investigations.

Ref: Riley A, Bain A, Hardie R, Walker D. An egg related foodborne outbreak of *Salmonella enteritidis* Phage Type 4 infection at a primary school. CD(S)U Weekly Report, 1994. vol 28, no 94/43.

## CASE CONTROL STUDY: AN EXAMPLE

This example is based on an actual outbreak.

From January to March 1994, SCIEH received reports of 19 identifications of *Escherichia coli* O157, of which none were phage type (PT) 4. During April, however, 26 reports of *E.coli* O157 were received, of which 19 were PT 4. Three further cases of *E.coli* O157 PT 4 infection were received in May.

The early descriptive epidemiology of the 22 cases showed that those affected were not from any readily identifiable group of people. There was a wide variation in the demographic characteristics of cases. They included males and females, who were aged from 1 to 61 years, resident in six different health board areas. There was no obvious point source, and that no single function or meal was implicated.

More detailed enquiries revealed that nine of the cases were residents of five towns in one county: six of these had dates of onset between 3 and 7 April; two more occurring the following week: all had contact with one of two butcher's shops belonging to the same chain. Other confirmed cases from elsewhere could not have the fact of contact with this chain either demonstrated or excluded. Two cases in addition to the 22, who were clinically similar, but microbiologically unconfirmed, did have known exposure to the same chain of shops.

A case control study was undertaken to test the hypothesis that infection with *E.coli* O157 PT 4 was associated with the purchase of hamburgers from the suspect chain of shops. A case was defined as someone with laboratory confirmed *E.coli* O157 PT 4 infection acquired in Scotland, with a date of onset after 1 April 1994. Secondary cases (the second or subsequent case occurring in a household) were excluded from analysis, as the power of the study to confirm the hypothesis being tested would be reduced by the inclusion of cases likely to have acquired their infection by person-to-person spread. Cases who had been away from their home area in the week prior to their onset were also excluded, because of the difficulty in identifying suitable controls.

In general, controls must have two characteristics. First they must be free of the disease under study (or the power of the study will be reduced), and second, they must have had a similar possibility of exposure to the suspected risk factor as the cases. In addition, it adds to the power of the study if controls can be 'matched', that is, if they can be as like the cases as possible in all respects, save the presence of illness. Controls for this study were selected from the Community Health Index. Three controls were selected per case. Each control was matched for age (within ten years for an adult, or five for a child) locality of residence (post code sector, or electoral ward). Any person with a recent history of diarrhoea, or who had been out of their home area was also excluded. This was not an ideal sampling frame, as ethical restrictions precluded its use as a source for eight of the cases. As one case had been away from home shortly before the onset of illness, only nine cases were included in the case control study.

A standard questionnaire, designed especially for this study, was administered by trained interviewers to nine cases and 27 controls eliciting information on demographic and clinical details, as well as food purchasing patterns of their households, and place of purchase of specific food items such as mince, hamburgers, meat, milk and vegetables in the week prior to illness. The results were analysed in EpiInfo, and are presented in the table.

	Purchased Burger	Didn't purchase Burger	Total
Case	6	3	9
Control	4	23	27
Total	10	26	36

The Fisher's exact test was used to assess the significance in the difference in the proportion of exposed cases and controls, because of the small numbers anticipated in some cells. The analysis resulted in a p-value of 0.006, indicating that the purchase of hamburgers in the week prior to the onset of illness in cases was so much more frequent in cases than controls as to be unlikely to be due to chance.

As it is implausible that the purchase of hamburgers in itself would cause illness, it was concluded that the consumption of hamburgers was the cause of the outbreak of infection with *E.coli* O157 PT 4 infection.

This study illustrates a number of the cardinal features of a case control study:

1. The outbreak was identified through routine surveillance.
2. In depth interviews with cases led to the formation of a hypothesis.
3. The hypothesis was tested by means of a case control study.
4. Subjects for the study were chosen on the basis of the presence or absence of illness, and information about exposure to the proposed risk factor obtained by standard questionnaire.
5. Appropriate statistical tests confirmed the hypothesis.

The statistics must, as always be viewed in the context of the biological plausibility of the hypothesis, and supported, where possible, by microbiological and environmental investigations.

Ref: Davis BS and Brogan RT. A widespread community outbreak of *E.coli* O157 Infection in Scotland. Public Health, 109(5), 381-8, September 1995.





<p>Dr Rachel Chalmers Cryptosporidium Reference Unit NPHS Microbiology Swansea Singleton Hospital Sgeti Swansea SA2 8QA</p> <p>Telephone: 01792 285341 Direct Email: Rachel.chalmers@nphs.wales.nhs.uk</p>	<p>Cryptosporidium</p>	<p>Reference Laboratory for confirmation and Specialised detection of Cryptosporidium in human stool samples</p>
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<b>Laboratory /Address/Telephone Number</b>	<b>Organism/virus/species</b>	<b>Service provided</b>
<p>Health Protection Agency Laboratory of Enteric Pathogens Centre for Infections 61 Colindale Avenue London NW9 5EQ</p> <p>Direct Line: 0208 327 6114 Fax: 020 8905 9929</p>	<p>1 Enteroinvasive Escherichia coli (EIEC) 2 Enteropathogenic Escherichia coli (EPEC) 3 Enterotoxigenic Escherichia coli (ETEC) 4 Enteroaggregative Escherichia coli (EAggEC) 5 Vero cytotoxin-producing Escherichia coli (VTEC)  6 Vibrio cholerae 7 Vibrio parahaemolyticus 8 Yersinia spp.  9 Campylobacter species  10. Shigella spp.</p>	<p>Identification/serotyping Identification/serotyping Identification/serotyping Identification/serotyping Identification/serotyping, phage typing, VT typing. Serodiagnosis (O157) Identification/serotyping Identification/typing Identification/biotyping/serotyping. Serodiagnosis for Y. enterocolitica and Y. pseudotuberculosis Identification/typing (requires prior consultation) Identification/serotyping/phage typing  Molecular typing (PFGE) for all of the above when indicated</p>
<p>Scottish <i>E coli</i> O157 Reference Laboratory Department of Medical Microbiology Western General Hospital Crewe Road Edinburgh EH4 2XU</p> <p>Telephone: 0131 537 1940/2892</p>	<p>Vero-cytotoxin-producing Escherichia coli (VTEC)</p>	<p>Phage typing/verotoxin detection  Pulsed field gel electrophoresis</p>

<b>Laboratory/Address/Telephone Number</b>	<b>Organism/virus/species</b>	<b>Service provided</b>
<p>Health Protection Agency Virus Reference Department Centre for Infections 61 Colindale Avenue London NW9 5EQ</p> <p>Direct Line: 020 8200 4400 Ext 3023 or 3237 Fax: 020 8200 1569</p>	<p>Hepatitis A virus Norovirus Rotavirus Sapovirus Astrovirus</p>	
<p>Salmonella Reference Laboratory Department of Microbiology Stobhill Hospital 133 Balornock Road Glasgow G21 3UW</p> <p>Telephone: 0141 201 3000 Direct Line: 0141 201 3666</p>	<p>Salmonella spp. Salmonella Typhi Salmonella Paratyphi types A-C</p>	<p>Identification/typing Pulsed Field Gel Electrophoresis Plasmid profiling</p>

<p>Department of Bacteriology Glasgow Royal Infirmary 84 Castle Street Glasgow G4 OSF</p> <p>Telephone: 0141 211 4000 Direct Line: 0141 211 4640</p>	<p>Salmonella to species level</p> <p>Shigella to species level</p> <p>E.coli O157</p> <p>Campylobacter Cryptosporidium</p>	<p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification</p> <p>Identification</p>
<p>Department of Bacteriology Southern General Hospital 1345 Govan Road Glasgow G51 4FT</p> <p>Telephone: 0141 201 1100 Direct Line: 0141 201 1710</p>	<p>Salmonella to species level</p> <p>Shigella to species level</p> <p>E.coli O157</p> <p>Campylobacter Cryptosporidium</p>	<p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p>



<p>Department of Bacteriology Western Infirmary Dumbarton Road Glasgow G11 6NT</p> <p>Telephone: 0141 211 2000 Direct Line: 0141 211 2246</p>	<p>Salmonella to species level</p> <p>Shigella to species level</p> <p>E.coli O157</p> <p>Campylobacter Cryptosporidium</p>	<p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification</p> <p>Identification</p>
<p>Department of Bacteriology Victoria Infirmary Langside Road Glasgow G42 9TT</p> <p>Telephone: 0141 201 6000 Direct Line: 0141 201 5605</p>	<p>Salmonella to species level</p> <p>Shigella to species level</p> <p>E.coli O157</p> <p>Campylobacter Cryptosporidium</p>	<p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification. Then sent for confirmation and typing to reference laboratory.</p> <p>Identification</p> <p>Identification</p>

## **FOOD HYGIENE INSPECTION AIDE MEMOIRE**

The following Food Hygiene Inspection aide memoire is intended for use in the premises at the time of inspection and does not include items concerning pre-inspection preparation or post inspection follow up action/procedure. It may be modified as appropriate dependant upon the nature of the implicated premises and the precise circumstances of any particular outbreak investigation.

Purpose:

- to establish whether food is being handled and produced hygienically;
- to establish whether food is, or will be having regard to further processing, safe to eat;
- to identify foreseeable incidences of food poisoning or injury as a consequence of consumption of food.

With this in mind, the main objectives of the food hygiene inspection are the:

- determination of the scope of the business activities and of the relevant food safety legislation that applies to the operations taking place at the premises.
- thorough and systematic gathering and recording of information, from observations and discussions with food handlers, proprietors and managers.
- identification of potential hazards and associated risks to public health.
- assessment of the effectiveness of process controls to achieve safe food.
- assessment of the hazard analysis or Hazard Analysis and Critical Control Point (HACCP) based food safety management system operated by the business.
- consideration of specific contraventions of food safety legislation.
- investigation of appropriate enforcement action, (proportionate to risk), to secure compliance with food safety legal requirements.
- provision of advice and information to food business proprietors and food handlers.
- recommendation of practical, good food hygiene practices, in accordance with Industry Guides and relevant sector specific codes of practice where appropriate.

- the promotion of continued improvements in food hygiene standards through the adoption of good practice.

### **Premises General Information /Inspection Preparation**

- **Previous file records** (should be referred to prior to inspection).
- **Premises data** (should be checked/updated).
- **Scope of business** (should be checked prior to and as part of the inspection).
- **Food risks/controls** (officers should familiarise themselves with the risks and controls identified in previous inspections).

### **Food Hygiene Inspection Aide Memoire**

#### **Hazard Analysis**

- **Gather information on the operational/process steps relevant to the business** (including an assessment of any flow charts drawn up by the business).
- **Assess the proprietor's implementation of satisfactory controls and monitoring at CCPs** (for this purpose observations made during the visit may be used).
- **Assess the 'analysis' elements of compliance** (i.e. the identification of hazards, critical points and controls. Carefully focused questions on these matters should be used).
- **Discuss with the proprietor any action to achieve compliance including timescales.**
- **A record should be made of the key points from the above** (including areas of non compliance and agreed timescales).

#### **Compliance with Food Hygiene Prerequisites of the Food Safety Regulations.**

The inspection should include checks on compliance with the following requirements of the food safety regulations. (The matters in brackets are aide memoire prompts relating to the requirements which may assist):

- **Training/Instructions/Supervision** (induction, in-house/accredited, refresher, frequency, hazard analysis)
- **Personal hygiene** (standards, clothing, jewellery, hand washing)

- **Sickness arrangements** (understanding responsibility, reporting procedure)
- **Protection of food from contamination** (foreign bodies, cross contamination etc)
- **Temperature control** (cold or hot storage/display of food - cooking/cooling temperatures and times should be considered as part of hazard analysis)
- **Design/Layout** (appropriate production flow, protection against cross contamination, and accumulation of dirt, attach diagram if necessary)
- **Changing facilities** (where necessary, adequacy)
- **Structure suitability** (permits cleaning/disinfection, appropriate for use)
- **Structure maintenance** (clean, good repair and condition, hygienic)
- **Equipment suitability/maintenance** (permits cleaning/disinfection, appropriate for use/clean, good repair and condition).
- **Water supply** (adequate, potable)
- **Cleaning/Washing** (and where necessary disinfection - adequate facilities/sinks and chemicals)
- **Wash hand basins in food rooms** (accessibility, hot and cold, soap detergent/drying facilities)
- **Sanitary accommodation** (adequacy, ventilation, WHBs, hand drying)
- **Waste Disposal** (storage in food rooms, storage at premises, disposal arrangements)
- **Pest Control** (adequate preventative procedures to control)
- **Drainage** (effectiveness, maintenance, grease traps)
- **Lighting** (adequacy)
- **Ventilation** (suitable and sufficient, avoid dirty to clean airflow, access for cleaning)
- **Transport** (clean, protect from contamination)

## **Other Matters**

The inspection should also include checks on the following matters:

- **Traceability** (arrangements/detail of any recall procedures)
- **Complaints** (procedures/recent complaints)
- **Sampling** (in house company sampling details/recent results)
- Recent changes to procedures, practices or equipment

## **Food Hygiene Inspection General Information Form**

The following form may be used to record the 'static' information regarding the premises and business. Much of the information would already exist on a business premises file but it is recommended that it should be reviewed to ensure its accuracy.

### **Premises General Information**

#### **1. Premises Data**

1.1 Premises name:

1.2 Registration Date:

1.3 Trading name of company:

Specify company name if different:

1.4 Type of Premises:

1.5 Premises address:

1.6 Postcode:

1.7 Tel No: Fax: E-mail:

1.8 Opening times:

1.9 Production time: Service times: Days:

1.10 Name(s) of proprietor(s):

1.11 Name(s) of manager(s) (if different):

1.12 Details of head office (if different):

Home Authority contact details if applicable:

1.13 Responsibility for structural works (if not proprietor):

1.14 The proprietor has prepared the following documents:

cleaning schedule – yes/no

temperature control records – yes/no

training records – yes/no

hazard analysis – yes/no

1.15 Who is responsible to speak on behalf of the company:

## **2. Scope/Description of Business**

2.1 Type of foods produced/served (e.g. low risk/high risk/open/wrapped [Vacuum Packed/Modified Atmosphere Packaging?]):

2.2 Method of production/processing:

2.3 Scale of Distribution - use of vehicles - customer base (- satellite - other business - outside catering - special events –delivery service):

2.4 Off site facilities (details of off site storage/prep areas etc):

2.5 Description of business:

- sketch plans produced Yes/No (Date):
- flow diagrams produced Yes/No (Date):

(Attach details for file if available and label whether produced by the inspector or copied from the proprietor's document)

## **3. Food Risks/Controls**

Significant hazards/risks:

- No. of covers/Amount of food produced/sold:
- raw meat and ready-to-eat foods:
- Vacuum packing:

- use of raw eggs for high risk food:
- Product recall procedure Yes/No

Priority inspection rating score:

**Inspection category band:**

**General**

4. Details of previous food or environmental samples taken: Details/results/date:

5. Water source: private/mains. Any sampling carried out or other comments specify below:

6. Who provided this information:

Date:

Who recorded this information:

## FOOD SAMPLING AIDE MEMOIRE

The following sampling aide memoire is intended for use in respect of food sampling as part of an investigation. It may be modified as appropriate dependant upon the nature of the investigation and any particular circumstances.

- 1 As soon as there is reasonable suspicion, which may fall well short of scientific proof, that food premises are involved in a serious outbreak, then immediate arrangements should be made for the handling of food samples arising in connection with the investigation.
- 2 To ensure that all samples are suitable, if required, for use in evidence, a system should be put in place which ensures a complete audit trail from when the sample is taken to when it is handed over to the laboratory. Also that, once the result is known, appropriate follow up action is taken.
- 3 It is recommended that at the beginning of any outbreak which has a potential to have significant public health implications that an experienced environmental health officer/food safety officer should be designated whose responsibility is to co-ordinate the logging, storing and movement of samples throughout the investigation. This officer would have overall responsibility for instructing and overseeing other officers in the correct taking of samples and for ensuring that the documentation for the audit trail is complete.
- 4 A master sampling register should be maintained, which should record at least the following information: the unique sample reference number (cross referenced to the sample documents separately filed); sample description; date taken; date to laboratory; date result received; result; persons notified and dates; follow up required - yes/no; if yes - officer assigned; confirmation that follow up was taken (cross referenced to the sample number of follow up).
- 5 All samples for examination should be taken by an authorised officer of the Local Authority and should be submitted to the food examiner at a laboratory accredited for the purposes of examination, and which appears on the list of official food control laboratories.
- 6 Samples for examination are not required to be divided into three parts since the non-homogeneous distribution of bacterial contaminants means that no two samples will be the same. It is not appropriate to retain a part for examination later in the event of a dispute, as bacteria may not survive prolonged storage or conversely, may greatly multiply.
- 7 The quantity of any sample procured should be such as to enable a satisfactory examination to be made. The quantity will vary according to circumstances but should normally be at least 100 grams. In any case of doubt the food examiner should be consulted.

- 8 Officers should take steps to ensure that, as far as possible, samples for examination reach the laboratory in a condition microbiologically unchanged from that existing when the sample was taken. Appropriate action to avoid contamination of the sample and microbial growth or death during sampling, transport and storage should therefore be taken. Samples should be transported and stored under conditions which inhibit changes in microbial numbers, and be delivered to the laboratory without undue delay.
- 9 Samples for microbiological examination should be taken and handled in a manner that eliminates the risk of contamination during the sampling process. Sampling officers should have regard to any advice provided by the food examiner on the need to observe aseptic sampling techniques. The owner of the food should be given the opportunity, if present, to observe the sampling procedure.
- 10 The officer should ensure that all relevant information is passed to the food examiner with the sample to ensure that the sample is subjected to the most appropriate examination, and to enable the examiner to interpret the results. **This information may include:** the name and authority of the sampling officer; sample number/tagging reference(s); date, time and place of sampling; time of delivery to the laboratory; description of sample including batch or lot number, canning code, bar code, class number (in the case of fruit and vegetables); durability date (use by, best before, etc); reason(s) for sampling; whether legal action may result in the case of a bad result being received; name of owner, manufacturer, importer, seller, buyer, as appropriate; (for cooked foods) process and dated of cooking (if known); country of origin, conditions of storage in that country, transport conditions and transport time if known); conditions of storage at place of sampling; other relevant storage factors, e.g. condition of packages, humidity, sanitation; method of sampling (random through lot, random throughout accessible units, otherwise); conditions of storage and transport since sample taken; and clinical and epidemiological details.
- 11 The sampling officer should retain a copy of the information (usually on the laboratory food sample form).
- 12 An officer who has taken a sample for examination and who has evidence that an alleged offence has been committed under the Act should, as soon as is reasonably practicable, notify the manufacturer of the food giving details of the alleged offence. Any person who has been so notified is entitled on request to a copy of the Certificate of Examination, as is the owner of the food.

## CHECKLIST FOR PRODUCT RECALLS

This aide memoire for product recalls is intended to be used in respect of product recalls as part of an investigation. It may be modified as appropriate dependant upon the product and precise circumstances of any particular recall.

- 1 It is recommended that at the beginning of any outbreak which has a potential to have significant public health implications that an experienced environmental health officer/food safety officer should be designated whose responsibility is to lead a well organised team of officers in tracing potentially contaminated food. This team should be encouraged to use initiative during their investigations.
- 2 As soon as a Food Authority becomes aware of a problem which goes beyond its boundaries, or where the problem is of a serious nature, then the FSA(S) should be advised. At the earliest possible stage the Food Authority should provide the Agency with all of the available information specified in the relevant Code of Practice made in terms of the Food Safety Act 1990. The Agency will then as soon as possible consider the need for a Food Hazard Warning to be issued, or the need for action to be taken in terms of the Food and Environment Protection Act 1995 or any other measures in terms of food safety legislation.
- 3 In the event of a major outbreak, consideration should be given at an early stage whether it is necessary to seek additional staffing support from another local authority.
- 4 Business operators must be encouraged to give full and honest information in connection with the precise nature of food produced and its distribution pattern. If necessary, EHOs/FSOs should use the powers available in the Food Safety Act 1990 to ensure that they are provided with accurate information. All relevant information concerning potentially contaminated food must be obtained at the earliest possible stage in the investigation.
- 5 Where appropriate, immediate checks should be made of relevant business records, including consignment notes, invoices and computer system records. Relevant staff in premises implicated in foodborne illness outbreaks should be quickly identified in order to lead the search for relevant documentation.
- 6 Powers of inspection, detention and seizure of food provided to EHOs/FSOs by the Food Safety Act 1990 should be used where necessary. The overriding consideration in the use of these powers should be the protection of public health.
- 7 Where voluntary withdrawals of food are accepted then the details of the voluntary agreement should always be immediately confirmed in writing to avoid any future doubt.

- 8 Effective media relations are important and this should be given urgent attention. It can often be helpful to have someone whose function it is to service the media, e.g. a Public Relations Officer. Consideration should be given to the issue of timeous press releases containing relevant information about potentially contaminated products (see advice in Sections 3.32 – 3.32.7 on media liaison).
- 9 Every step should be taken to alert domestic customers as well as trade when an outbreak occurs, e.g. cooked meats can be stored in domestic freezers for months. Notices should be placed in shop windows warning customers not to eat, but to destroy or return, any contaminated products purchased from relevant premises, including those which may be in fridges or freezers. The notice could also ask customers to spread the word of possible contamination of products. In relevant circumstances the police may be asked to assist in delivering food recall messages.
- 10 Consideration should be given to the need to provide advice concerning not consuming products which may have been cross-contaminated by products implicated in the outbreak.

This checklist of some matters which need to be considered in relation to product recalls is not exclusive and each case needs to be considered on its own merits:

- Establish who is in overall charge of the recall operation
- Agree detail of the product(s) concerned
- Inform/discuss with supplier(s)
- Inform/discuss with insurers and encourage supplier(s) to do so also
- Agree the precise nature of the fault
- Identify details of incidents which have occurred
- Agree the hazard presented, risk level and degree of urgency
- Establish the batch/code number or date of affected products and their location
- Establish the number of products affected
- Establish how the fault arose
- Confirm why only those products affected are at risk
- Establish the company's formal response
- Have available a list of key emergency telephone numbers
- Establish the format of in-store notice
- Establish the media plan
- Establish the format of advertisement

- Establish the wording of a radio/TV announcement
- Establish how to deal with media enquiries eg. Nominated spokesperson
- Establish who/how to deal with customer enquiries
- Consider methods of communication with customers
- Inform Trade Associations and agree communications between food business(es) and Government bodies as appropriate, eg. FSA and the Home Local Authority

## A TEMPLATE FOR AN OUTBREAK CONTROL TEAM REPORT

### 1. INTRODUCTION

A brief summary of the outbreak and setting the scene.

### 2. BACKGROUND

Optional section depending on the outbreak and implicated organism(s). If uncommon pathogen implicated, give brief description of clinical features, incubation period, infectious dose, source and modes of spread, diagnosis and treatment, etc. Also give background prevalence of the disease locally, nationally and globally if relevant.

### 3. INVESTIGATION OF THE OUTBREAK

#### 3.1 Epidemiological

##### i Descriptive:

description of initial cases, case definition and hypothesis generation, enhanced surveillance

##### ii Analytical:

case control and/or cohort studies.

#### 3.2 Environmental

e.g. food, water, risk assessment of production and distribution including food chain, etc, staff interviews

#### 3.3 Microbiological/Toxicological

local labs, reference labs, etc, clinical, food/water and environmental samples

### 4. RESULTS

#### 4.1 Epidemiological

#### 4.2 Environmental

#### 4.3 Microbiological

## **5. CONTROL MEASURES**

- 5.1 Overall co-ordination and management of the outbreak
- 5.2 Care of cases
- 5.3 Prevention of further cases (primary and secondary spread)
- 5.4 Public information
- 5.5 Information to professionals/businesses, etc
- 5.6 Outline of food safety enforcement action

## **6. DISCUSSION AND CONCLUSION**

## **7. LESSONS LEARNED AND RECOMMENDATION**

## **8. APPENDIX**

This report should be agreed by all members of the OCT. If there is any disagreement among OCT members on the content of the report, this should be stated clearly in front of the report.

## USEFUL TELEPHONE NUMBERS AND OUT OF HOURS NUMBERS

<b>The Scottish Executive</b>	0131 556 8400
<b>NHS National Services Scotland</b>	0131 275 6000
<b>Health Protection Scotland</b>	0141 300 1100 0141 211 3600 (Out of Hours)
<b>Scottish Poisons Information Bureau</b>	0870 600 6266 (24 Hours)
<b>The Food Standards Agency (Scotland)</b>	01224 285100 07881 516867 (Main Out of Hours) 07776 172167 (Back-Up Out of Hours)

<b>National Health Service Boards</b>		
	<b>Office Hours</b>	<b>Out of Hours</b>
<b>Argyll &amp; Clyde</b>	0141 314 0225	0141 884 5122
<b>Ayrshire &amp; Arran</b>	01292 611040	01563 521133
<b>Borders</b>	01896 825500 Direct Dial: 01896 825517	01896 826000
<b>Dumfries &amp; Galloway</b>	01387 272724	01387 246246
<b>Fife</b>	01592 226435	01383 623623
<b>Forth Valley</b>	01786 463031	01786 434000
<b>Grampian</b>	01224 558520	0845 456 6000
<b>Greater Glasgow</b>	0141 201 4444	0141 211 3600
<b>Highland</b>	01463 704886	01463 704000
<b>Lanarkshire</b>	01698 281313	01236 748748
<b>Lothian</b>	0131 536 9189	0131 536 9336
<b>Orkney</b>	01856 888000	01856 888000
<b>Shetland</b>	01595 743340	01595 743000
<b>Tayside</b>	01382 596984	01382 660111
<b>Western Isles</b>	01851 708036	01851 704704

## Local Authority Environmental Health Departments

	Office Hours	Out of Hours
<b>Aberdeen City</b>	01224 523800	Pager Dial: 07699113300 Vodafone switchboard will ask for a number, quote 07699729968 and then leave a message for the duty officer.
<b>Aberdeenshire</b>	01261 813271	08456 081203
<b>Angus</b>	01307 473600	07702 529138
<b>Argyll and Bute</b>	01546 604173	07886174059
<b>Clackmannanshire</b>	01259 452588	01259 452000
<b>Dumfries and Galloway</b>	01557 330291	D Grant: 07712 667001 L Paton: 07712 666990 K MacKenzie: 07712 666770 D Collins: 07712 666910 Care Call: 01387 260000 will take a message and contact duty officer.
<b>Dundee City</b>	01382 436260	L Matthew 01738 552107 F Feechan: 01382 667362 A Oswald: 01382 552644
<b>East Ayrshire</b>	01563 576023	01563 821180 0788725000
<b>East Dunbartonshire</b>	0141 578 8781	J. Harkin Principal EHO 07747 165812 J King Environmental Health Manager 0141 563 1742
<b>East Lothian</b>	01620 827365	George Fairgrieve: 01620 880209 David Evans: 01620 870204
<b>East Renfrewshire</b>	0141 577 3000	On Call Officer: 07901 813372 William Arthur: 07721 743 943 Alan Broadley: 07887 631 787 Anne Higgins: 07767 811 485 Rhona Douglas 07976 822 998
<b>Edinburgh City</b>	0131 529 3030	0131 200 2000
<b>Falkirk</b>	01324 504950	01324 503050
<b>Fife</b>	01592 712 762	01592 415000
<b>Glasgow City</b>	0141 287 6555	0141 287 6688 til 03:00hrs Alternatively 0800 595 595 when 0141 287 6555 not available
<b>Highland</b>	01463 702516	01463 713479
<b>Inverclyde</b>	01475 714200	01475 719999
<b>Midlothian</b>	0131 270 7500	0131 663 7211

<b>The Moray Council</b>	01343 563358	01542 870213
<b>North Ayrshire</b>	01294 324355  01294 324384	Kevin McMunn Home: 01475 520450    Mobile: 07776 163885 Catherine Reilly Home: 0141 6384773    Mobile: 07966 350364 Kevin Thomas Home: 01294 467120    Mobile: 07880 502665
<b>North Lanarkshire</b>	01236 616422	07939 280880
<b>Orkney</b>	01856 873535	D Brown Home 01856 751214    Mobile 07710 819497 A D Marsh Home 01856 874043
<b>Perth and Kinross</b>	01738 476400	J Dixon : 01738 620864 D Stewart: 01738 621586 K Steven: 01738 620852
<b>Renfrewshire</b>	0141 840 3106	07884 116794
<b>Shetland</b>	01595 744841	01595 692110 Lerwick police who should be requested to relay details to the Council's emergency planning officer.
<b>Scottish Borders</b>	01450 364706	01896 752111 Border Care who has the Council duty rota.
<b>South Ayrshire</b>	01292 618222	01294 553349 01292 678955 01292 263068
<b>South Lanarkshire</b>	01355 806943	0800 242024
<b>Stirling</b>	0845 277 7000	0845 277 7000
<b>West Dunbartonshire</b>	01389 737000	0800 1971004 01389 738642
<b>West Lothian</b>	01506 775400	01506 631240/630288 Ask to be put through to the Environmental Health out of hours Officer.
<b>Western Isles</b>	01851 703773	01851 701702

## Reference Laboratories

### Health Protection Agency - Specialist and Reference Microbiology Division, Centre for Infections

	<u>Direct Dial</u>
Food Safety Microbiology Laboratory	0208 327 7116
Laboratory of Enteric Pathogens	0208 327 6114
Enteric, Respiratory and Neurological Virus Laboratory	0208 327 6209

### Scottish Reference Laboratories

		<u>Direct Dial</u>
<i>E-coli</i> O157		0131-537-1940/2892
Scottish Parasite Diagnostic Lab	0141-201-3000	0141-201-3028/3029
Salmonella Reference Lab	0141-201-3000	0141-201-3666
Dept Bacteriology, Glasgow Royal Infirmary	0141-211-4000	0141-211-4640
Dept Bacteriology, Southern General Hospital	0141-201-1100	0141-201-1710
Dept Bacteriology Western Infirmary	0141-211-2000	0141-211-2246
Dept Bacteriology Victoria Infirmary	0141-201-6000	0141-201-5605

## USEFUL WEBSITES

## SCOTLAND

The Scottish Executive	<a href="http://www.scotland.gov.uk">www.scotland.gov.uk</a>
The Food Standards Agency Scotland	<a href="http://www.food.gov.uk">www.food.gov.uk</a>
Health Protection Scotland	<a href="http://www.hps.scot.nhs.uk">www.hps.scot.nhs.uk</a>
NHS Health Scotland	<a href="http://www.healthscotland.com">www.healthscotland.com</a>
The Royal Environmental Health Institute Scotland	<a href="http://www.rehis.org">www.rehis.org</a>
Convention of Scottish Local Authorities	<a href="http://www.cosla.gov.uk">www.cosla.gov.uk</a>
NHS Health Scotland	<a href="http://www.hebs.scot.nhs.uk">www.hebs.scot.nhs.uk</a> <a href="http://www.phis.org.uk">www.phis.org.uk</a>
Scotland's Health on the Web	<a href="http://www.show.scot.nhs.uk">www.show.scot.nhs.uk</a>
Scottish Consumer Council	<a href="http://www.scotconsumer.org.uk">www.scotconsumer.org.uk</a>

## OTHER

Her Majesty's Stationery Office	<a href="http://www.hmso.gov.uk">www.hmso.gov.uk</a>
Institute of Food Science & Technology (UK)	<a href="http://www.ifst.org">www.ifst.org</a>
Centers for Disease Control and Prevention	<a href="http://www.cdc.gov">www.cdc.gov</a>
Health & Safety Executive	<a href="http://www.hse.gov.uk">www.hse.gov.uk</a>
Local Authorities Coordinators of Regulatory Services	<a href="http://www.lacors.com">www.lacors.com</a>
Communicable Disease Surveillance Centre Northern Ireland	<a href="http://www.cdscni.org.uk">www.cdscni.org.uk</a>
Department of Environment, Food and Rural Affairs	<a href="http://www.defra.gov.uk">www.defra.gov.uk</a>
National Health Service	<a href="http://www.nhs.uk">www.nhs.uk</a>

Health Protection Agency [www.hpa.org.uk](http://www.hpa.org.uk)

Food Safety Microbiology Laboratory [www.hpa.org.uk/srmd/div\\_dgi\\_fsml/index.htm](http://www.hpa.org.uk/srmd/div_dgi_fsml/index.htm)

Laboratory of Enteric Pathogens [www.hpa.org.uk/srmd/div\\_dgi\\_lep/index.htm](http://www.hpa.org.uk/srmd/div_dgi_lep/index.htm)

Enteric, Respiratory and  
Neurological Virus Laboratory [www.hpa.org.uk/srmd/div\\_vrd\\_ernvl/index.htm](http://www.hpa.org.uk/srmd/div_vrd_ernvl/index.htm)

National Health Public Service for Wales [www.wales.nhs.uk](http://www.wales.nhs.uk)

Consumers' Association [www.which.co.uk](http://www.which.co.uk)