Section 5  
Control measures

5.1 General
The primary goal of outbreak investigations is to control ongoing public health threats and to prevent future outbreaks. Ideally, control measures should be guided by the results of these investigations but as this may delay the prevention of further cases it is often unacceptable from a public health perspective. At the same time, specific interventions – such as recalling a food product or closing food premises – can have serious economic and legal consequences and must be based on accurate information. Thus the implementation of control measures is often a balancing act between the responsibility to prevent further cases and the need to protect the credibility of an institution.

5.2 Control of source
Once investigations have identified an association between a particular food or food premises and transmission of the suspected pathogen, measures should be taken to control the source. Steps may include:

- removing implicated foods from the market (food recall, food seizure);
- modifying a food production or preparation process;
- closing food premises or prohibiting the sale or use of foods.

Closing food premises

*If site inspections reveal a situation that poses a continuing health risk to consumers, it may be advisable to close the premises until the problem has been solved.* This may be done with the agreement of the business or be enforced by law (closing order). Once premises have been closed they should be monitored by the responsible authorities and remain closed until appropriate authorities approve their reopening. The criteria for reopening of establishments may vary by jurisdiction and may involve input from various agencies involved in the investigation and control of the outbreak.

Removing implicated foods from the market

The objective of food recall and food seizure is to remove implicated foods as efficiently, rapidly and completely as possible from the market.

A **food recall** is undertaken by any business responsible for the manufacture, wholesale, distribution or retailing of the suspect food – from large corporations or partnerships to family-owned businesses – and may be initiated by the business itself or undertaken at the request of an appropriate health authority. **Food seizure** is the process by which an appropriate authority removes a food product from the market if the business does not comply with the request to recall. In most cases, businesses will comply with such a request to protect themselves from private lawsuits and damaged reputation where appropriate consumer protection legislation exists. Government regulatory agencies will often have an active role in removing implicated foods from distribution. In many situations, company recalls of products are carried out voluntarily at the suggestion of government authorities.
General

The longer the time that passes between a food appearing on the market and it being identified as a potential source, the less likely is recovery of that food.

The shelf-life of a food product will affect how much of it will be recovered. Most establishments ship fresh products (fresh meat, poultry, milk, etc.) to distributors on the day that they produce it, and distributors will quickly pass it on to hotels, institutions, retail stores and restaurants. The product is generally consumed within 3–7 days of production and the likelihood of recovery is poor.

Frozen or shelf-stable food products (e.g. cans, dried foods, packaged foods) are more likely to be recovered as there is less urgency to move them through the system. Thus, if these types of product are recalled, there is a good possibility that they will still be with distributors or retailers or on the consumers’ shelves.

Procedure

Once investigations implicate a suspect food, a decision is needed on whether that food should be removed from the market. This decision may rest with agencies represented on the OCT or involve other bodies concerned with food safety. Such authorities must decide:

- whether the information available justifies removal of the food from the market;
- whether the product is still on the market;
- whether the product is likely to be in the homes of the consumer even though sold out at retail level;
- whether there is an ongoing risk to the consumer;
- how likely it is that the product can be recovered.

Authorities (such as the OCT) may be faced with presumptive findings that would justify a recall but without corroborative evidence. In such situations, a decision must be based on all factors in the particular case. For example, if a canned food product has been implicated as one of several potential sources in a botulism outbreak, all efforts would be made to retrieve the cans in circulation, including those in the hands of consumers, even at the risk of being wrong. It is vital that all information and decisions related to the need to remove an implicated food from the market are adequately documented.

Once the appropriate authorities have decided to recall a food product, they should:

- communicate with, and ensure the cooperation of the business(es), involved in the recall;
- directly advise local health authorities of the recall and any enforcement action required;
- ensure appropriate public notification;
- monitor the progress and effectiveness of the recall;
- ensure that corrective actions are taken by the recalling business.

The recalling business is usually responsible for conducting the actual recall. The extent of recall will depend on the potential risk to the consumer. A business may conduct a recall to the level of the retailer or, if public health is seriously jeopardized, to the level of the individual consumer. Means of notification will depend on the urgency of the situation and may include press releases, faxes, letters, telephone calls, and announcements on radio or television.

Efficient recall of a widely distributed product requires that a manufacturer can identify a product by production date or lot number and that distribution records for finished products are maintained for a period of time that exceeds the shelf-life of the product.
Communication with the public

Although the business may have already issued a press release, the OCT or food safety committee itself may decide to notify the public. Ideally, this should be done on the same day that the decision is taken to recall a food product. Information to the public should include:

- actions that consumers should take to prevent further exposure and illness;
- name and brand of the food product (including labelling) being recalled;
- the nature of the problem, the reason for recall of the product, and information about how the problem was discovered;
- name and location of the producing establishment and point of contact;
- locations where the product is likely to be found;
- numbers, amounts, and distribution;
- a description of common symptoms of the illness associated with the suspected pathogen or contaminant;
- appropriate food-handling information for consumers;
- actions that consumers should take if illness occurs.

Sometimes important new information becomes available after the initial release is published. This may necessitate a correction or update, or a complete revision and simultaneous removal from circulation of the first release.

Issuing a press release is of little use when consumers have not seen the product package or cannot identify the product directly, as in the case of products shipped to restaurants and large institutions. Efforts then should concentrate on issuing general food safety advice to the public.

Post-recall reporting by the business

After implementation of a food recall, the business should provide the food safety committee or other appropriate authorities with interim and final reports about the recall, which should contain the following information:

- copy of recall notice, letters to customers, retailers, etc;
- circumstances leading to recall;
- action taken by the business;
- extent of distribution of the batch of food that was recalled;
- result of recall (percentage of stock recovered or accounted for);
- method of disposal or reprocessing of recovered stock;
- difficulties experienced during recall;
- action proposed for the future to prevent a recurrence of the problem.

The interim and final reports thus give information about the effectiveness of the recall: if they are unsatisfactory, or evidence of corrective action is inadequate, further recall action may need to be considered.

Modifying a food production/ preparation process

Once food investigations identify faults in production or preparation processes that may have contributed to the outbreak, corrective action must be taken immediately to avoid recurrences. Examples of corrective actions are modification of a recipe or of a process, reorganization of working practices, change in storage temperatures, or modification of instructions to consumers.
5.3 Control of transmission

Public advice
If a contaminated food product cannot be controlled at its source, steps need to be taken to eliminate or minimize the opportunities for further transmission of the pathogen. Depending on the situation, appropriate public advice may be issued during a period of hazard, for example:

- boiling of microbiologically contaminated water or avoidance of chemically contaminated water;
- advice on proper preparation of foods (see Annex 10, WHO Five Keys to Safer Food);
- advice to dispose of foods;
- emphasizing personal hygiene measures.

Exclusion of infected persons from work and school
The risk of infection being spread by infected individuals depends on their clinical picture and their standards of hygiene. People with diarrhoea are far more likely to spread infection than asymptomatic individuals with subclinical illness.

Decisions about exclusion from work must be made by health authorities in accordance with local laws and regulations. In general, the following groups with diarrhoea or vomiting should stay away from work or school until they are no longer infectious:

- food-handlers whose duties involve touching unwrapped foods to be consumed raw or without further cooking or other forms of treatment;
- people who have direct contact with highly susceptible patients or persons in whom gastrointestinal infection would have particularly serious consequences (e.g. the young, the elderly, the immunocompromised);
- children aged under 5 years;
- older children and adults with doubtful personal hygiene or with unsatisfactory toilet, hand-washing or hand-drying facilities at home, work or school.

Even if clinically well, no person with any of the following conditions should handle unpackaged food:

- excretor of Salmonella typhi or Salmonella paratyphi;
- excretor of the etiological agents of cholera, amoebic dysentery or bacillary dysentery;
- hepatitis A or hepatitis E and all other forms of acute hepatitis until diagnosed as other than hepatitis A or hepatitis E;
- Taenia solium (pork tapeworm) infection;
- tuberculosis (in the infectious state).

More specific exclusion criteria are provided in Section 6.3. Otherwise, clinically healthy persons who are asymptomatic excretors of enteric pathogens and have good hygiene pose a minimal risk and do not need to be excluded from work or school.

If an ill food-handler was implicated in an outbreak, recommendations should be made for preventing such problems in the future, such as ensuring that mechanisms are in place for routine screening to prevent ill persons from working.
Advice on personal hygiene

Advice on personal hygiene should be issued to all individuals with gastrointestinal disease and should include the following:

- Avoid preparing food for other people until free from diarrhoea or vomiting.
- Thoroughly wash hands after defecation, urination and before meals. Thorough hand-washing with soap in warm running water and drying is the most important factor in preventing the spread of enteric diseases.
- Use your own separate towels to dry hands. Institutions, particularly schools, should use liquid soaps and disposable towels or hand-dryers.
- Clean toilet seats, flush handles, hand-basin taps and toilet door handles with disinfectant after use. If young children are infected, these cleaning procedures must be undertaken on their behalf. Similar arrangements may also be necessary in schools and residential institutions (if temporary exclusion is not possible).
- If employed in food preparation activities, scrub your nails with soap and a brush.

Infection control precautions

Infection control precautions for hospitalized and institutionalized persons with infectious diarrhoea (in particular, easily transmissible infections such as *Salmonella typhi*, *Shigella*, etc.) include:

- isolation of patients (e.g. in a private room with separate toilet if possible);
- barrier-nursing precautions;
- strict control of the disposal or decontamination of contaminated clothing and bedding;
- strict observation of personal hygiene measures (see above).

Protecting risk groups

Certain groups are at particularly high risk of severe illness and poor outcomes after exposure to a foodborne disease. Safe food-handling practices, including strict adherence to thorough hand-washing, should be particularly emphasized to such people. Specific advice for risk groups may be considered in some circumstances. Examples include advice to:

- pregnant women against consumption of unpasteurized milk, unpasteurized cheeses, and other foods potentially contaminated with *Listeria*;
- immunocompromised persons, such as those with HIV/AIDS, to avoid eating unpasteurized milk products, raw fish, etc;
- persons with underlying liver disease to avoid consumption of raw oysters and other food that may transmit *Vibrio* bacteria;
- persons with underlying chronic viral hepatitis B or C or other liver disease to be vaccinated against hepatitis A if appropriate;
- personnel of day-care centres about receiving vaccination or immunoglobulin during a hepatitis A outbreak in the institution (although this is more likely to protect against secondary spread than against foodborne transmission).
5.4 End of outbreak

Review of outbreak
The OCT should formally decide when an outbreak is over and issue a statement to this effect.

A structured review should follow all outbreaks for which an OCT is convened and should include a formal debriefing meeting with all parties involved in the investigation. The aims of debriefing are to:

- ensure that control measures for the outbreak are effective;
- identify long-term and structural control measures and plan their implementation;
- assess whether further scientific studies should be conducted;
- clarify resource needs, structural changes or training needs to optimize future outbreak response;
- identify factors that compromised the investigations and seek solutions;
- change current guidelines and develop new materials as required;
- discuss legal issues that may have arisen;
- arrange for completion of the final outbreak report.

A “brainstorming” session, held in an open and positive environment, may produce additional valuable suggestions and ideas not addressed during the formal debriefing. Consideration should be given to using an external facilitator for the review sessions.

Outbreak report
An interim report should be made available by the OCT 2–4 weeks after the end of the investigations, followed by a written final report. The final report should be comprehensive, protect confidentiality and be circulated to appropriate individuals and authorities. The report should follow the usual scientific format of an outbreak investigation report (see Annex 6) and include a statement about the effectiveness of the investigation, the control measures taken and recommendations for the future.

In addition, a summary report should be completed and forwarded to the appropriate authorities at national level for collation, analysis (see Annex 6) and, when appropriate, reporting to the international level (e.g. SalmNet, EnterNet, WHO, etc.).

Future studies, research
Further studies may be conducted after completion of the initial investigations, particularly if new or unusual pathogens were involved or additional information for risk assessment of a particular pathogen is required. The need to catch up on routine work delayed by the outbreak investigation often makes it difficult to conduct such follow-up studies. Nevertheless, it is important that these opportunities be considered following each outbreak – either by OCT members themselves or by others who may be in a better position to do this. Details of the outbreak may also be published in an international journal in order to inform the scientific community at large.
Economic evaluations of outbreaks and associated control efforts can be important in assessing the cost-effectiveness of outbreak investigations and food safety measures. Foodborne outbreaks will incur costs to:

- health care providers (diagnostic and curative services);
- the population (medication, time missed from school or work, reduced activity as a consequence of long-term sequelae, death);
- the food industry (closure, adverse publicity, recall, litigation);
- agencies, laboratories and other persons and organizations involved in the investigation, response and control activities.

Costs associated with outbreaks can be enormous, and quantifying them may help to increase the commitment of the food industry and other agencies to food safety.