

# SECTION 11

# OUTBREAK MANAGEMENT

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# ESTABLISH AN OUTBREAK EXISTS

## IMPLEMENT INFECTION CONTROL

### MEASURES

## IDENTIFY AND CONTROL SOURCE

An outbreak is the occurrence of disease exceeding the expected level for a given population within a specific timeframe. This includes single cases of some diseases not previously seen in Australia or those that have been eliminated from Australia, such as measles.

### 11.1 Outbreak investigation and management

The objective of outbreak management of communicable diseases is to interrupt transmission as quickly as possible to prevent further cases. The key principles of outbreak investigation and management are:

- Recognising and confirming the outbreak
- Notification to public health
- Defining cases and collating information
- Implementing infection control measures to prevent further transmission
- Identifying and controlling the source of the outbreak
- Effective communication, education and reporting of the outbreak
- Debriefing and dissemination of findings to prevent recurrence.

### 11.2 Outbreak response procedures in healthcare facilities

Each local health district should have a local outbreak plan which has been developed in consultation with Public Health Units and other key stakeholders. This plan should be reviewed periodically but at least every two years and after an outbreak. The local outbreak response plan should be implemented in an outbreak.

Outbreak response procedures may include and identify the following:

#### Outbreak preparation

- A description of the roles and the responsibilities and accountabilities of each of the

organisations and individuals

- An up-to-date list of stakeholder contact details
- Arrangements for informing and consulting those who need to be informed of an outbreak
- Communication cascade for notification of the outbreak
- Arrangements for the implementation of an outbreak management team (OMT) to investigate and control a major disease outbreak
- The support available to the OMT and their responsibilities in supporting the OMT
- Business continuity arrangements
- Resources required to manage an outbreak
  - Human resource arrangements
  - Training for all staff involved in investigating communicable disease outbreaks.
- Surveillance systems for outbreak detection

#### Outbreak response

- Outbreak identification including guidance on the definition of an outbreak
- Process for systematic collection and recording of information, including guidance on what information is required to be collected about each case
- Process for regular communication (situation reports) to stakeholders including guidance on information to be communicated
- Clear guidance to staff for outbreaks that are identified out of hours
- Criteria for when an outbreak is considered over
- The requirement to complete and disseminate the final outbreak report

### 11.3 Outbreak management team

An OMT is a multi-disciplinary group who work together to investigate and manage an outbreak. The core team is responsible for planning and coordinating the investigation.

#### 11.3.1 Factors to consider in convening an outbreak management team

The decision to convene an OMT will be made by relevant personnel, such as the chairperson of the infection prevention and control committee or the LHD Chief Executive (CE) or their delegate. Not all outbreaks will require an OMT. The following factors should be considered in the decision to convene an OMT:

- Epidemiology: number and characteristics of both cases and the population at risk
- Infectious agent; mode of transmission, infectiousness, and clinical significance
- Likely source of the outbreak
- Potential impact on service delivery
- Potential public health risk
- Public concern and media interest

### 11.3.2 Outbreak management team - membership

An OMT may include expertise from the groups listed below. Where not available locally, the health care facility may contact the CEC to identify expert assistance as required.

- Infection Prevention and Control
- Microbiology/Virology
- Laboratory
- Infectious diseases
- Hospital management
- Epidemiology
- Public Health Unit
- Communications
- Antimicrobial stewardship
- Environmental cleaning management
- Staff health
- Directors/managers of relevant clinical units – including nursing, medical and allied health staff where applicable

A **lead** should be identified from the OMT, who is responsible for ensuring that:

- The OMT acts effectively, with all activities well-coordinated and managed
- Sufficient resources are allocated to the OMT
- Regular updates are provided to the LHD executive and the CEC
- Issues are escalated via an agreed pathway to the LHD/SHN executive
- Decisions made by the OMT are communicated and recorded appropriately
- An OMT report is prepared when the outbreak is over
- A debrief is held with the OMT and relevant clinical teams when the outbreak is over

### 11.3.3 Outbreak management team -responsibilities

The responsibilities of the OMT may be grouped under Operations, Logistics and Communications. The OMT should develop a plan to investigate and control the outbreak based on the following steps, which will be implemented concurrently.

#### Operations

- Review available evidence to establish the existence of an outbreak and identify additional information required
- Develop a case definition on which to base the epidemiological investigation
- Undertake active case finding using the agreed case definition
- Create a line list containing information on each case including potential risk factors
- Identify the source of the outbreak by examining common risk factors in cases; this may require an epidemiological analysis
- Implement control measures to prevent further transmission and assess their effectiveness of these measures.
- Identify and utilise any opportunities for the acquisition of new knowledge about disease control
- Declare the conclusion of the outbreak, as per identified criteria and prepare and disseminate a final report
- Evaluate the response to the outbreak and implement changes in OMT procedures as indicated

## Communications

- Develop and maintain communication processes with key stakeholders e.g. situation reports
- Disseminate minutes and actions for each OMT meeting
- Keep relevant outside agencies, the general public and media appropriately informed

## Logistics

- Conduct formal outbreak control meetings on a regular basis
- Ensure adequate staff and resources are available for outbreak management, seek assistance from Hos executive for additional resources if needed
- Allocate tasks to outbreak team members ensuring roles and responsibilities are clear
- Provide support and advice to everyone directly involved in the outbreak
- Consider the potential for staff training opportunities generated by the outbreak

A checklist of important tasks for OMTs can be found in appendix 3.

An outbreak management checklist which could be used by OMTs or ICPs can be found in appendix 4.

### 11.3.4 Outbreak management team - communication requirements

The OMT should determine communication requirements locally and develop a communication plan accordingly. [The 'Triggers for Escalation Following Detection of Infection Outbreaks or Clusters'](#) should be used to determine the need to further escalate communication.

Outbreaks in specialty clinical areas that have limited bed numbers within NSW (e.g. NICUs, Spinal and Burns units) have the potential to adversely affect service delivery and require immediate escalation locally and to other relevant outside agencies.

At the conclusion of the outbreak, a final report should be prepared. The final report should be considered a public document so due regard should be given to confidentiality. The final report should include:

- The results of the outbreak investigation and control interventions
- Any difficulties or problems encountered
- Any action required to prevent recurrence and the agency responsible
- Any recommended revisions to the facility-specific outbreak management plan

The final report should be circulated to all members of the OMT, the LHD executive, any relevant patient safety and quality committee members and any other relevant agencies.

## 11.4 The investigation and control of an outbreak

Outbreak management falls into four phases – detection, investigation, response, and evaluation of response. In practice there is considerable overlap between the phases especially between the detection, investigative and response phases.

### 11.4.1 Outbreak detection

Outbreak management begins with the detection and confirmation of an outbreak. Confirmation of an outbreak requires verification of the diagnosis of the disease (symptoms or pathology results) and evidence the number of infected individuals exceeds the expected number of cases.

If confirmed, the extent and significance of the outbreak is assessed, which will inform the decision to implement the facility-specific outbreak response plan and convene the OMT.

## 11.4.2 Outbreak investigation

In the initial stage of an outbreak investigation a case definition should be established. A case definition is a standard set of criteria to be used in outbreak investigation to decide who is a case and who is not. It should include well-defined clinical symptoms (+/- laboratory criteria) and restrictions by time, place and person. Once established, attempts should be made to find additional cases meeting the definition.

Detailed epidemiological data should be collected from each case. Information to be collected includes:

- Identifying information (name, Identification number, date of admission)
- Demographic information (age, gender, address etc.)
- Clinical information (date/time of onset, place of onset, signs and symptoms, death, hospitalisation, treatment, etc.)
- Laboratory information
- Potential risk factors (contact with known case, or individuals with similar symptoms, recent travel, immunosuppression, environmental exposure, other co-morbidities etc.)

The most common way this information is collated is by using a line list. An example line list form can be found in appendix 2.

Other information which may assist in identifying the source include:

- Patient health records
- Environmental assessment (e.g. identification of contaminated food or food handling equipment, infection control breaches, cleaning, environmental sampling)
- Analysis of epidemiological data (e.g. movements and contacts of cases)
- Laboratory data (e.g. whole genome sequencing)

Depending on the infectious cause of the outbreak, it may be necessary to identify contacts of cases. Liaise with local PHU for guidance on what constitute a contact. Contact tracing of staff and other individuals exposed within a healthcare organisations should be carried out by that HO. If the exposure occurred in the community, contact tracing should be carried out by the local PHU. For individuals exposed in facilities, but who are now in the community e.g. patients discharged from Emergency Departments, local plans should specify who should conduct contact tracing. What constitutes a contact and management of contacts varies depending on the infection causing the outbreak. Further information on the identification and management of contacts of different infections can be found in [NSW health control guidelines](#).

## 11.4.3 Outbreak response

The primary goal of outbreak response is control and prevention of further transmission. Control measures should be considered and implemented as soon as possible. Appendix 1 lists recommended precautions for some common and important infectious diseases.

If an OMT is required, it should be established at this stage. The OMT should review and implement further control measures as deemed necessary. Control measures should aim to either eliminate the potential source of infection or prevent further transmissions.

## 11.4.4 Evaluation of response (Debrief)

An evaluation of the outbreak response should be undertaken at the conclusion of the outbreak as part of the final report. The evaluation should determine if the incident objectives were met, identify positive outcomes and evaluate areas for improvement.

Aspects of the outbreak response for evaluation may include:

- Preparedness for this type of investigation (includes resources, guidelines, questionnaires, databases, etc.)
- Coordination of outbreak meetings, communication with stakeholders (including media management)
- Administration and record keeping
- Timeliness of outbreak detection, identification of source and implementation of control measures
- Effectiveness of investigation process and control initiatives implemented

### **11.5 Outbreak management in community settings**

The principles of outbreak investigation and response in community settings remain the same as those used in healthcare facilities. Escalation of the outbreak should occur to the local PHU to determine the need and scale of the response required for each outbreak depending on the situation.

## 11.6 Emerging infectious diseases

### 11.6.1 Respiratory viruses

The threat of emerging respiratory viruses such as pandemic influenza, novel Coronavirus, SARS-CoV and MERS-CoV are a potential cause of concern for the health system. The difficulty about the emergence of these viral infections is that no one can predict where and when the next epidemic or pandemic will occur.

HOs should follow the disease specific NSW Health control guidelines in the event of a respiratory virus outbreak.

**NSW Health control guidelines:**  
[Influenza control](#)  
[MERS-CoV](#)  
[SARS-CoV](#)

[NSW Health](#)  
Human Influenza Pandemic Plan

[Australian Guidelines for the Prevention and Control of Infection in Healthcare](#)

### 11.6.2 Viral haemorrhagic fevers

Viral haemorrhagic fevers (VHFs) refer to a group of illnesses that are caused by several distinct families of viruses. VHFs are severe and life-threatening viral diseases that are endemic to parts of Africa, the Middle East, Eastern Europe and Asia. VHFs are not indigenous to Australia and environmental conditions here are unlikely to support the natural reservoirs and vectors of any of the haemorrhagic fever viruses.

[NSW Health GL](#)  
NSW Contingency Plan for  
Viral Haemorrhagic Fevers

[NSW Health](#)  
Viral Haemorrhagic Fevers

VHFs are caused by viruses of four distinct families:

1. Arenaviruses: Lassa Fever, Junin and Machupo
2. Filoviruses: Ebola and Marburg
3. Bunyaviruses: Crimean-Congo haemorrhagic fever, Rift Valley Fever, Hantaan haemorrhagic fevers; and
4. Flaviviruses: Yellow fever, Dengue, Omsk haemorrhagic fever, Kyasanur Forest disease.

VHFs are of particular public health importance because:

- they can spread via human-to-human contact
- they present a particular transmission risk within a hospital setting
- they are often associated with a high case fatality rate
- they can have a long asymptomatic incubation phase
- there is no clear differential symptomatology for these infections
- they are difficult to test for
- there are few if any effective treatments

VHFs are notifiable infectious diseases and scheduled medical conditions under the NSW Public Health Act (2010).

[NSW Health Public Health Act 2010](#)

[Biosecurity Act](#)

VHFs are *Listed human diseases* under the national Biosecurity Act 2015. This allows biosecurity measures to be implemented to manage risks to human health, mainly through imposing human biosecurity control orders such as isolation measures.

[NSW Health GL](#)  
NSW Contingency Plan for  
Viral Haemorrhagic Fevers  
[NSW Health Ebola virus disease control guideline](#)

HOs should follow the NSW VHF Contingency Plan for Viral Haemorrhagic Fevers which addresses both suspected and confirmed VHF cases.