



Australian Government

DEFPH014A Investigate and control outbreak of disease

Release: 2

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Modification History

Release	TP Version	Comments
2	DEF12V2	Layout adjusted. No changes to content.
1	DEF12V1	Primary release.

Unit Descriptor

This unit covers the competency required to investigate and control outbreak of disease within the Australian Defence Force (ADF).

Application of the Unit

The application of this unit in the workplace includes initiating an investigation within an organisation including gathering data through interview, and inspecting, sampling and analysing that information to draw conclusions to classify the disease. It also includes identifying and implementing immediate and long-term control measures to prevent the re-occurrence of disease outbreak.

This function may be performed in collaboration with other health service personnel and may be initiated and led by a medical officer.

This unit of competency is applicable to preventive medicine technical officers. This function is limited to the performance of tasks in accordance with organisational policies and procedures.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element.

Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather data in support of the investigation	<p>1.1 <i>Relevant personnel</i> within affected organisation are liaised with to gain consent for investigation and to inform them of the process to be undertaken.</p> <p>1.2 <i>Factors affecting the complexity of the investigation</i> are determined and addressed to facilitate commencement of investigation activities.</p> <p>1.3 Persons assisting with the investigation are tasked and provided with appropriate guidance to enable them to assist independently.</p> <p>1.4 Verification of outbreak is confirmed by comparison of reported cases with the usual incidence of cases experienced.</p> <p>1.5 If possible, presumptive diagnosis is obtained from medical officer to focus investigation effort.</p> <p>1.6 <i>Initial control measures</i> are instigated to limit the spread of disease and to provide early treatment to those displaying symptoms of the disease.</p> <p>1.7 Interviews are conducted with both affected and non-affected personnel to identify the <i>common factors in the outbreak of disease</i> including the potential source/s of disease.</p> <p>1.8 Information gathered is treated as <i>in-confidence</i> and is only disclosed to persons needing to know who are assisting in the investigation.</p> <p>1.9 Questionnaires are administered to both affected and non-affected personnel to elicit further information of the common factors in the outbreak of disease.</p> <p>1.10 Onsite inspections are conducted of places found to be common to those affected by the disease to gather <i>site information</i> to assist with the identification of the disease source/s.</p> <p>1.11 <i>Equipment</i> is used during onsite inspection in accordance with organisational policies and procedures.</p>

2. **Analyse data to classify the path of disease**
 - 2.1 **Data** from all sources is collated to enable comparison and analysis.
 - 2.2 Data assessed as being not related to the disease outbreak is removed to enable accurate analysis.
 - 2.3 **Characteristics of the disease** are assessed to determine the route of disease and likely targets.
 - 2.4 Disease attack rate is determined to establish the cumulative incidence rate of disease over the period of the outbreak.
 - 2.5 Data is used to develop an endemic curve diagram to show the spread of infection over time and to identify the likely incidents of exposure to the disease.
 - 2.6 Attack rate data and likely incidence of exposure are used as a basis for identifying **risk factors** present in disease outbreak to focus the scope of further investigation.
 - 2.7 Further data is gathered, based on the identified risk factors, and is integrated into analysis.
 - 2.8 Information gathered during onsite inspection, such as sample testing results, is compared with analysis findings to classify the disease source, route and target.
 - 2.9 Finding from the analysis are documented and communicated to relevant personnel to enable appropriate notification to occur and to inform the development of control measures.
3. **Determine and implement disease control measures**
 - 3.1 **Compliance factors** are reviewed to identify the systemic issues which may have contributed to the disease outbreak and which require corrective action.
 - 3.2 **Clean up procedures** are determined to allow facilities and/or the environment connected with the source of disease to return to normal activity as soon as possible.
 - 3.3 **Monitoring procedures** are determined to confirm compliance with initial clean up and adherence with organisational policies and procedures aimed at preventing the spread of disease.
 - 3.4 **Disease control measures** are determined to provide both immediate and long term control of disease including prevention and early detection.
 - 3.5 Investigation findings and disease control measures are compiled into a disease outbreak report and issued to relevant personnel for review and implementation.

3.6 Those directly and indirectly involved in the disease outbreak are debriefed to clarify the investigation outcomes and to provide an opportunity for learning on the prevention of disease.

3.7 Disease control measures are integrated with the wider environmental health support plan to apply lessons learned in the disease outbreak to other operating areas and groups.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- communicate clearly and concisely, orally and in writing
- communicate professionally with members of the organisation and health services
- conduct full range of investigational activities
- document investigation findings and produce detailed written reports
- establish and maintain administrative systems
- establish and maintain cooperative working relationships with those contacted in the course of work
- interpret the significance of medical, health and other data obtained from a variety of sources
- interview cases to determine demographic, medically relevant information and risk factor data
- lead, plan, assign and review the work of personnel assisting with the investigation
- maintain confidentiality
- prioritise tasking
- respond to organisational inquiries and provide information within area of own expertise
- work independently in the absence of supervision

Required Knowledge

- administrative systems
- aetiology of infectious diseases, including microbiology
- best use of available resources
- biological, ecologic and social factors that promote the spread of a disease
- causes of manpower wastage
- chronic and communicable diseases, including bioterrorism agents, their transmission, prevention and control methods
- control measures for disease transmission
- current disease surveillance methods

- documentation processes relevant to own workplace
- epidemiologic investigative principles, practices and procedures
- epidemiology of disease
- water quality assurance measures
- food storage and distribution standards including the Hazard Analysis and Critical Control Point (HACCP) approach to food control
- legal rights and responsibilities
- organisational policies and procedures
- planning and control systems
- risk management principles
- role and capabilities of other health care providers including environmental health team
- team leadership management principles
- time management strategies to set priorities

Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessment must confirm the ability to:

- gather data using a minimum of three data collection methods outlined in the performance criteria
- classify the path of disease using calculated attack rates, endemic curve diagrams and assessed risk factors as the basis for analysis
- determine control measures applicable to the disease and the circumstances of the outbreak

Consistency in performance

Competency should be demonstrated over a minimum of two investigation scenarios.

Context of and specific resources for assessment

Context of assessment

Competency should be assessed in a simulated situation or scenario.

Specific resources for assessment

Access is required to:

- simulated situation or scenario of outbreak of disease with all supporting information
- equipment required to perform measurement, testing and on site inspection

Range Statement

<p>The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. <i>Bold italicised</i> wording in the Performance Criteria is detailed below.</p>	
<p><i>Relevant personnel</i> may include:</p>	<ul style="list-style-type: none"> • Activity commander • Environmental health officer • Health planning personnel • Medical personnel • Pathology specialist
<p><i>Factors affecting the complexity of the investigation</i> may include:</p>	<ul style="list-style-type: none"> • Availability of personnel • Availability of resources • Continued prevalence of disease • Operational constraints • Time lapse since first reported case • Wellness of personnel affected by the disease
<p><i>Initial control measures</i> may include:</p>	<ul style="list-style-type: none"> • Diverting to the use of alternative sources of food and water • Early referral for treatment • Exclusion of suspected personnel from duties (e.g. food handlers) • Quarantine of water, food, personnel • Restriction of personnel to designated areas • Screening of personnel for illness • Shutting down food, water production facilities
<p><i>Common factors in the outbreak of disease</i> may include:</p>	<ul style="list-style-type: none"> • Activity • Attendance at facilities • Food history (72 hours) • General health history • Hygiene practices • Movement • Onset of symptoms • Report to medical facility • Routine
<p><i>In-confidence</i> may include:</p>	<ul style="list-style-type: none"> • Adherence to Privacy Act • Information disclosed to an appropriate person consistent with the responsibility of this position • Interview area with privacy • Legal and ethical requirements • Secure location for written records
<p><i>Site information</i> may include:</p>	<ul style="list-style-type: none"> • Compliance records • Environmental swabs

	<ul style="list-style-type: none"> • Measurements • Qualitative and quantitative data gathered through interview • Policies and procedures • Quality records • Samples • Site layout diagram • Site occupant status (such as numbers, activity, health, attendance, qualifications)
Equipment may include:	<ul style="list-style-type: none"> • Adhesive tape • Cotton swabs (sterile) • Dial thermometers • Forceps (sterile) • Ice, wet or dry • Microbiological lab test request form samples • Pencils • Phosphate buffered solution • Questionnaires for use in collecting information from patients • Rubber bands • Sample bottles (sterile) • Sample spoons (sterile) • Sharp knife
Data may include:	<ul style="list-style-type: none"> • Circumstances which allegedly implicate a particular source • Copies of menus (for at least three days prior to the onset of symptoms for the first case) • Distribution of the disease by: <ul style="list-style-type: none"> • time (onset time and epidemic curve) • place (potential places where the implicated meal was served such as cafeterias, restaurants and picnics) • person (distribution of the disease by age, gender and food items eaten) • Illness in any person prior to the event or whether anyone vomited in a public place • Information regarding events leading up to, during or after a disease outbreak, including: <ul style="list-style-type: none"> • action on first reported case • environmental protection activities • epidemiology of presenting disease • food sources

	<ul style="list-style-type: none"> • group activities • hygiene procedures • operating environment • referral action • response to treatment by health personnel • secondary infections • subsequent environmental protection activities • water sources • Measurement results • Names and phone numbers of any contact person or organisers or contact details for all exposed persons • Sample test results (microbiological) • Symptoms and severity i.e. if any cases have been hospitalised, duration • Whether any personnel were ill prior to the outbreak or worked while symptomatic
<i>Characteristics of the disease</i> may include:	<ul style="list-style-type: none"> • Expected duration • Incubation period • Route of infection • Signs and symptoms • Time to onset
<i>Risk factors</i> may include:	<ul style="list-style-type: none"> • Occupation: <ul style="list-style-type: none"> • child care worker • food handler • health care worker • Possible source: <ul style="list-style-type: none"> • contact with other cases • environmental • food • institutional • occupational • water • Travel: <ul style="list-style-type: none"> • interstate • intrastate • overseas
<i>Compliance factors</i> may include:	<ul style="list-style-type: none"> • Compliance with: <ul style="list-style-type: none"> • HACCP • hygiene procedures • organisational policies and procedures

	<ul style="list-style-type: none"> • preventive maintenance • quality control measures • routine testing program
<i>Clean up procedures</i> may include:	<ul style="list-style-type: none"> • Discarding contaminated water • Discarding foodstuff • Safely removing suspect or contaminated items • Sanitising an area
<i>Monitoring procedures</i> may include:	<ul style="list-style-type: none"> • External auditing • Internal auditing • Periodic/random inspections • Quality control checks
<i>Disease control measures</i> may include:	<ul style="list-style-type: none"> • Controlling or modifying the host response to exposure: <ul style="list-style-type: none"> • immunising susceptible hosts • modifying behaviour or using a barrier (such as education) • using prophylactic chemotherapy • Controlling the source of the pathogen: <ul style="list-style-type: none"> • inactivating or neutralising the pathogen • removing persons from exposure • removing source of contamination • Interrupting the transmission of disease: <ul style="list-style-type: none"> • controlling mosquito or vector transmission using skin repellents • improving personal sanitation (such as washing hands before eating) • sterilising or disinfecting environmental sources of transmission

Unit Sector(s)

Not applicable.