

<b>Section:</b> UTMB On-line Documentation	<b>01.10 - Policy</b>
<b>Subject:</b> Infection Control & Healthcare Epidemiology Policies and Procedures	
<b>Topic:</b> 01.10 – Standard Operating Procedure – Epidemiologic Investigation	<b>07.19.18 - Author</b>

## **01.10 – Standard Operating Procedure – Epidemiologic Investigation**

<b>Purpose</b>	To define the process to investigate an outbreak of healthcare-associated infections (HAI) or single instances of healthcare-associated infections with public health or other epidemiologic significance.
<b>Policy</b>	Infection Control & Healthcare Epidemiology will conduct investigations of outbreaks and cluster of infections that appear to be linked.
<b>Outbreak</b>	<ul style="list-style-type: none"> <li>• Incidence over baseline.</li> <li>• Cluster of infections with possible epidemiologic linkage.</li> </ul> <p>HAIs with public health or other epidemiologic significance: Some HAIs require investigation even with a single incidence. Examples include, but are not limited to the following HAIs:</p> <ul style="list-style-type: none"> <li>• Legionellosis</li> <li>• Tuberculosis</li> <li>• Extremely drug resistant organism (XDRO)</li> <li>• Hepatitis C post-procedure or infusion</li> </ul>
<b>Procedure for Investigation</b>	<p>A. Outbreak investigation</p> <ol style="list-style-type: none"> <li>1. Notify Infection Control &amp; Healthcare Epidemiology Director of possible outbreak and develop the plan for the investigation.</li> <li>2. Designate an infection preventionist to lead the investigation.</li> <li>3. Initial evaluation <ol style="list-style-type: none"> <li>a. Verify the diagnosis of reported cases. <ol style="list-style-type: none"> <li>i. Review clinical, laboratory and epidemiologic findings</li> <li>ii. If the reported outbreak is based on a syndrome (e.g., outbreak of diarrheal illness), identify the causative agent if possible.</li> </ol> </li> <li>b. Develop a case definition <ol style="list-style-type: none"> <li>i. Determine epidemiologic, clinical and laboratory data to identify cases and classify as confirmed and possible.</li> <li>ii. Determine severity of the problem (e.g., colonization or infection)</li> <li>iii. Define time frame</li> </ol> </li> <li>c. Review clinical and laboratory findings to determine if cases are colonized or infected and to determine if the cases represent pseudoinfection (i.e., contaminated cultures or false-positive tests).</li> </ol> </li> <li>4. Implement any control measures (e.g. isolation) needed immediately</li> <li>5. Plan investigation <ol style="list-style-type: none"> <li>a. Verify the existence of an outbreak <ol style="list-style-type: none"> <li>i. Review data prior to the outbreak period to verify an increase in infections</li> <li>ii. Review data collection to determine if the increase is due to a change in methodology (i.e., an artifact).</li> <li>iii. Identify a prospective surveillance system to identify future</li> </ol> </li> </ol> </li> </ol>

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- cases
- iv. Consult Microbiology Laboratory
  - 1) Determine if a change in laboratory procedures might have caused an apparent increase in cases (e.g., switch from toxin assay to PCR)
  - 2) Request that isolates and/or specimens be saved from existing and future cases.
- b. Develop a line list of cases.
- c. Search literature for similar outbreaks of nosocomial infections for:
  - i. Identified risk factors, sources, reservoirs, modes of transmission
  - ii. Control measures
- d. Identify resources needed for investigation
  - i. Time
  - ii. Additional data sources (e.g. EPIC reports, environmental assessment, assessment of clinical practices)
  - iii. Additional laboratory tests that might be needed (e.g. surveillance cultures, environmental cultures or strain typing). Collaborate with Microbiology Laboratory.
  - iv. Assistance for analysis
- e. Determine the type of study (descriptive, case-control, or cohort) and identify the selection of control cases if applicable
- f. Develop a data collection tool
- g. Notify clinical leadership of area(s) affected.
- 6. Conduct investigation
  - a. Collect data
    - i. Descriptive epidemiology: describe events in terms of person, place, and time
    - ii. Control data if needed for case-control or cohort study
    - iii. Draw an epidemic curve
  - b. Evaluate the event
    - i. Identify any possible linkage (e.g. patients in adjacent rooms, patients identified serially to the same room, or patients who underwent the same procedure)
    - ii. Analyze initial data
    - iii. Determine if additional data or laboratory tests are needed.
  - c. Develop a hypothesis for possible source
  - d. Collect any additional data needed
  - e. Analyze data and interpret results: revise hypothesis if necessary
- 7. Communicate with clinical leadership throughout the investigation
- 8. Develop and implement interventions based on
  - a. Analysis: risk factors associated with infections
  - b. Literature search for best practices
  - c. Collaborate with clinical leadership
- 9. Assess effectiveness of interventions and revise as necessary
- 10. Summarize and present findings
- B. Investigation of an epidemiologically-significant infection:
  - 1. Notify Infection Control & Healthcare Epidemiology Director of case and plan an investigation

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2. Verify the diagnosis and potential association with the healthcare facility (hospital, procedure area, or ambulatory care location)
3. Report infection to public health as required (e.g., TB, legionellosis)
4. Plan investigation
  - a. Develop a case definition
  - b. Review data prior to the outbreak period
    - i. Search for additional cases that might not have been recognized as healthcare-associated
    - ii. If the disease is spread person-to-person, look for an index patient
    - iii. Identify a prospective surveillance system to identify future cases
  - b. Consult Microbiology Laboratory: Request that isolates or specimens be saved for additional testing if needed
  - c. Search literature for similar instances of nosocomial infections for:
    - i. Identified risk factors, sources, reservoirs, modes of transmission
    - ii. Identify resources needed for investigation
    - iii. Time
    - iv. Additional data sources (e.g. EPIC reports, environmental assessment, assessment of clinical practices)
    - v. Additional laboratory tests that might be needed (e.g. surveillance cultures, environmental cultures or strain typing). Collaborate with Microbiology Laboratory.
  - d. Develop a data collection tool
  - e. Notify clinical leadership of area(s) affected
5. Conduct investigation
  - a. Collect data
  - b. Descriptive epidemiology: describe event in terms of person, place and time
6. Evaluate the event
  - a. Identify any possible linkage with the index case (if known) or potential source
  - b. Develop a hypothesis for possible source
  - c. Communicate with appropriate leadership (e.g., BOF if an environmental source is suspected).
7. Collect any specimens or additional data needed
8. Analyze data and interpret results: revise hypothesis if necessary
9. Communicate with clinical leadership throughout the investigation
10. Develop and implement interventions to prevent additional cases based on:
  - a. Analysis: risk factors associated with infection
  - b. Literature search for best practices
  - c. Input from clinical leadership
11. Assess effectiveness of interventions and revise as necessary
12. Summarize and present findings

## References

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