

**University of Michigan Hospitals and Health Centers  
Infection Control & Epidemiology**

**OUTBREAK INVESTIGATION  
STEPS TO FOLLOW IN AN INVESTIGATION**

- 1. Confirm that an outbreak exists**
  - A. Case-finding (Need to develop criteria / case definition) – look for additional cases. Determine historical information.
  - B. Compare current situation with historical data or information in the literature
  - C. Report to local Health Department, if reportable disease
  - D. Have specimens held, as appropriate (for further testing)
  
- 2. Verify the diagnosis of cases; identify the agent**
  - A. Characterize signs and symptoms
  - B. Check susceptibilities to compare antibiograms of microbes
  - C. Obtain additional specimens, as appropriate
  
- 3. Communicate initial information to appropriate Infection Control & Epidemiology staff**
  - A. By phone, email, in person
  
- 4. Search for additional cases; collect critical data and specimens**
  - A. Perform routine surveillance
  - B. Discussions with staff (request you be informed if they notice patients with signs and symptoms of case definition)
  - C. Use data collection tool (develop one with data elements required)
  
- 5. Characterize the cases by person, place and time**
  - A. Develop line list of cases
  - B. Develop chronological graph and/or placement map, as appropriate
  - C. Develop epidemic curve, as appropriate
  - D. Evaluate patient characteristics (e.g. underlying diagnosis)
  - E. Calculate rates
  
- 6. Formulate tentative hypotheses of root causes**
  - a. Look for a potential carrier issue
  - b. Identify if contaminated solutions, equipment
  - c. Evaluate if person-to-person spread and what the cause might be (e.g. staffing issues, cleaning issues, etc.)
  
- 7. Communicate tentative findings**
  - A. To nurse manager, medical director/chief of service
  - B. Hospital Epidemiologist will determine if an administrative leader (e.g. Chief of Clinical Affairs), Public Relations, Risk Management to be informed
  
- 8. Institute appropriate control measures**

**9. Test hypotheses**

- A. May not need to do this – descriptive epidemiology (as in 5) may be enough to identify problem
- B. Perform cultures of equipment, environment
- C. Perform an observation study
- D. Discussion with staff
- E. Case-control or cohort study
- F. Review staffing of area

**10. Evaluate efficacy of control measures**

- A. Perform intensive surveillance looking for additional cases. Amount of time depends on type of outbreak & its epidemiology.

**11. Communicate findings**

- A. To nurse manager/medical director
- B. To surgeons
- C. To Hospital Epidemiologist
- D. To Infection Control & Epidemiology staff

**12. Interim reports**

- A. If cluster continuing despite control measures, write an interim report outlining measures & any issues that are outstanding regarding recommendations made. Continue to go back to step 5.

**13. Write final report**

- A. For unit-based problems – to nurse manager, medical director/chief of service, other areas, as appropriate (Environmental Services, Phlebotomy, IV Team)
- B. For patient-to-patient transmission - to nurse manager, medical director/chief of service, managers of Physical Therapy, Respiratory Care
- C. For OR-based problems - to nurse manager, medical director/chief of service, surgeons involved
- D. Copy Hospital Epidemiologist

**14. Place report into Infection Control & Epidemiology Department's Quality Assurance archives**

**15. Communicate with local Health Department, if appropriate.**

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