GUIDELINES FOR THE CONTROL OF RESPIRATORY OUTBREAKS IN LONG-TERM CARE AND OTHER INSTITUTIONAL SETTINGS

Introduction

New Jersey Administrative Code, Title 8, Chapter 57 mandates that long-term care and other institutional facilities immediately report any known or suspect communicable disease outbreak, by phone to the local health department (LHD) with jurisdiction over the facility. State facilities are to report directly to the New Jersey Department of Health and Senior Services (DHSS) which is responsible for leading state facility investigations.[1] DHSS shall inform the LHD and regional agency of a state facility outbreak to assure they are aware of communicable disease issues that may affect them, and request assistance as appropriate.

Reporting communicable disease outbreaks in healthcare institutions serves many purposes. **The immediate goal is to control further spread of the disease.** Beyond that, information gained from outbreak investigations can help healthcare facilities and public health agencies identify and eliminate infection sources such as contaminated products, learn about emerging problems, identify carriers to mitigate their role in disease transmission, and implement new strategies for prevention within facilities.

Respiratory Outbreaks

Each year outbreaks of respiratory illness including pneumonia occur in institutional settings such as nursing homes and other long-term care facilities (LTCFs). Because of their underlying health status, residents in LTCFs are at high risk for developing serious complications or dying when they become acutely ill. Historically, specific emphasis has been placed on influenza.

Influenza is a contagious respiratory disease that can cause substantial illness and death among LTCF residents and illness among LTCF personnel. In the United States, annual epidemics of influenza occur typically during late fall through early spring. Influenza is associated with approximately 36,000 deaths and 226,000 hospitalizations each year.[2]

Influenza vaccination of health care personnel and LTCF residents combined with basic infection control practices can help prevent transmission of influenza. Every effort should be made to ensure compliance with influenza vaccination recommendations each season. However, influenza outbreaks can still occur even when vaccine coverage among LTCF residents is high. As soon as a respiratory outbreak is suspected, the response to it should include antigen testing and/or viral isolation to evaluate residents and staff. If influenza is confirmed, appropriate use of antivirals should be initiated.[3]

In addition to the burden of influenza, other respiratory viruses that cause the “common cold” and bacterial pathogens causing respiratory illness affect residents and staff of LTCFs each year. Because infection with these agents can further compromise the already fragile health status of the LTCF resident, control of these agents in the LTCF is also critical.

Cluster and Outbreak

Much of the scientific literature differentiates between "clusters" and "outbreaks" of respiratory illness. The Centers for Disease Control and Prevention (CDC) define a respiratory illness cluster as three or more cases of acute febrile respiratory illness occurring within 48 to 72 hours, in residents who are in close proximity to each other (e.g., in the same area of the facility). It defines a respiratory illness outbreak as a sudden increase of respiratory cases over the normal background rate, or when any single resident tests positive for influenza.[3] This document does not differentiate between clusters and outbreaks in respect to response activities. When the number of acute respiratory illnesses cases is greater than what would be expected to occur within a single unit, wing, or throughout the entire facility during a defined time period, initiate an outbreak response. **The facility should not wait until an arbitrary number of cases (such as 10% of census) has occurred.**

The following guidelines have been established to facilitate the investigation of respiratory disease outbreaks and the implementation of control measures. Vaccination of residents **and healthcare workers** against influenza, meticulous hand washing and respiratory hygiene programs are key in preventing respiratory outbreaks. These guidelines emphasize priorities regarding respiratory outbreak control as follows:

- Early detection of an outbreak
- Stopping transmission through control measures
- Measuring morbidity and mortality
- Identifying the agent responsible for the outbreak
- Use of antiviral agents to help control influenza outbreaks

Reporting

Reporting refers not only to the initial outbreak notification, but also to routine updates of outbreak status. The facility and the LHD shall be in daily contact regarding case numbers, control measures taken, and other pertinent information.

Upon receiving the initial report, the LHD shall inform the regional agency and DHSS of the situation. Notification of the outbreak to the regional epidemiologist ensures regional agency awareness of communicable disease issues in their area, and gives the LHD access to consultation and assistance in managing the outbreak.

The facility shall:

- Notify The Assessment and Survey Unit of the Division of Health Facilities Evaluation & Licensing, via voicemail at 1-800-792-9770. *(This applies to Assisted Living Facilities, Assisted Living Programs, Comprehensive Personal Care Homes, Residential Health Care Facilities, and Adult and Pediatric Day Health Services Facilities ONLY)*
- Notify the LHD by phone; reports shall NOT be made via voice mail, fax, etc.
- When LHD staff cannot be reached, make the report directly to DHSS who will then contact the LHD and regional epidemiologist. Call numbers are 609-588-7500 during business hours or 609-392-2020 after hours.

The LHD shall:

- Notify DHSS at 609-588-7500 during business hours or 609-392-2020 after hours.
- Notify the regional epidemiologist.

- State facilities shall
  - Make the report directly to DHSS at 609-588-7500 during business hours or 609-392-2020 after hours.

Case Investigation

Upon notification, DHSS will assign an "E" number to the outbreak. Clearly mark all correspondence and lab samples with this number.

The LHD, in consultation with the regional epidemiologist, shall lead the investigation by providing the facility with guidance, support and assistance. The LHD should consider making an on-site visit for initial evaluation and ongoing assessment. The facility shall follow the basic steps listed below. Note: Steps may occur simultaneously during the course of the investigation.

1. Confirm that an outbreak exists.
2. Verify the diagnosis using clinical, epidemiological and lab test information, considering seasonal disease occurrence.
3. Develop a case definition based on clinical and laboratory criteria.
4. Perform active surveillance.
5. Document cases in a line list.
6. Identify and eliminate transmission sources when possible.
7. Institute control measures, balancing infection control concerns with disruption of residents' quality of life routines.
8. Evaluate effectiveness of control measures and modify as needed.
9. Summarize the investigation in a written report to communicate findings.

1. Confirm that an outbreak exists.

- Compare the number of current cases to expected norms. Suspect an outbreak when the number of acute respiratory illness cases is greater than what would be expected to occur within a single unit, wing, or throughout the entire facility during a defined time period.

2. Verify the diagnosis.

- Determine the cause of acute respiratory illness based on the history, physical exam and/or laboratory findings of the resident or staff member. Diagnostic testing can aid clinical judgment and guide outbreak control decisions**.** Be alert for noninfectious causes of symptoms such as COPD exacerbations. Influenza infections are seasonal, with higher incidence from December through April. During these months, when signs and symptoms are clinically compatible, strongly consider influenza.
- Obtain laboratory confirmation of the infecting organism by testing specimens from approximately 5 symptomatic residents or staff within 24-48 hours of illness onset. Rapid antigen viral testing and virus culture should be done by collecting two simultaneous swabs. Use one swab for on-site rapid testing, and send the second swab to the lab for virus culture. Bacterial culture should be considered as well, particularly during an outbreak of pneumonia. Strictly follow the protocol entitled "Instructions for Sending Viral Respiratory Illness Specimens for Testing" since the

techniques used for the collection and submission of specimens can influence the outcome of test results.

- Lab testing may be done through the facility's standard procedures or at the state Public Health and Environmental Laboratory (PHEL). The LHD or regional epidemiologist shall facilitate lab testing and/or specimen transport. **All specimens sent to PHEL must be properly labeled and packaged**.
- At least two laboratory-confirmed cases are needed to confirm an outbreak's etiology. When necessary, collect additional specimens from newly ill cases. When fewer than two laboratory-confirmed cases are found, a probable infectious agent can be inferred through clinical signs and symptoms.

3. Develop a case definition.

- The case definition describes the criteria that an individual must meet to be counted as an outbreak case, including clinical signs & symptoms, physical location and specific time period.
- The case definition will be developed collaboratively by the facility, LHD and the regional epidemiologist based on the current situation. DHSS is available for consultation as needed.
- Two examples of case definitions for acute respiratory illness associated with a LTCF setting are shown below:

  1. Residents or staff on XYZ Unit experiencing an illness that is characterized by fever and at least two of the following, on or after mm/dd/yy:
     - Rhinorrhea (runny nose)
     - Nasal congestion
     - Sore throat
     - Cough (productive or non-productive)
     - Change in appetite
     - Change in mental status
     - Headache
     - Lethargy
     - Myalgia
     - Respiratory distress, dyspnea, shortness of breath
     - Pleuritic chest pain
     - Radiographic evidence of a pulmonary infiltrate

  2. Laboratory evidence of a respiratory pathogen such as influenza in a resident or staff member of Unit XYZ on or after mm/dd/yy **AND** at least one symptom or sign compatible with respiratory infection (e.g. rhinitis, pharyngitis, laryngitis, cough or pneumonia).

Note: Fever may be difficult to determine in elderly residents. Therefore, the definition of fever used for respiratory illness may be defined as temperature ≥ 100°F OR 2° above the established baseline for that resident.

4. **Perform active surveillance.**
   - Seek out additional cases of respiratory illness among residents and staff. Be alert for new-onset illness among exposed persons, and review resident and staff histories to identify previous onsets of illness that may not have been correctly recognized as being part of the outbreak.
   - Use influenza testing promptly in newly identified cases of respiratory illness so that infection control measures specific to influenza can be initiated to prevent spread (e.g., antiviral prophylaxis.)

5. **Document and count cases.**
   - The facility shall develop and maintain a line list. A sample line list for residents with acute respiratory illness may be found at http://nj.gov/health/forms/cds-11.dot.
   - The LHD investigator shall review the line list with the facility and regional epidemiologist to assess the status of the outbreak and make recommendations regarding control measures.

6. **Identify and eliminate possible transmission sources.**
   - A floor plan may be used in conjunction with a line list to document the physical locations of case-patients and ill staff to identify possible transmission routes.
   - **Exclude sick staff**. Staff members who become sick with a fever and/or respiratory symptoms shall be sent home immediately and excluded from patient care for 5 days following onset of symptoms, when possible.[3] Before sending staff home, perform rapid influenza testing and use an antiviral agent for treatment and prophylaxis as appropriate.
   - **Monitor personnel absenteeism.** Staff that report absence due to fever and/or respiratory symptoms shall be excluded from work until their illness has resolved.
   - **Inform receiving facilities of the outbreak when transferring residents.** Transfer notification applies to both ill residents and exposed well residents. If at all possible, limit transfers to medical necessity.
   - The facility, LHD and regional epidemiologist should collaborate to determine the outbreak source. Occasionally, even with thorough investigation, the source might not be identified.

7. **Institute control measures.**

   Control measures are the tools that can end the outbreak by halting transmission. The LHD, in consultation with the regional epidemiologist, shall provide recommendations and guidance to the facility regarding control measures. Control measures can negatively impact residents' quality of life by restricting their lifestyle, and staffing limitations are difficult to implement. Nevertheless, the facility should make every effort to institute and maintain adequate control measures until the outbreak is declared over.

Basic control measures are listed below.

A. Cohort residents, staff, equipment and supplies according to their living/work area.

- Identify three cohort groups: 1.) “Ill” 2.) “Exposed” (not ill, but potentially incubating) and 3.) “Not ill/not exposed” (new admissions/staff.)
- Restrict use of equipment and supplies to use within a specific area, and do not allow residents/staff from one cohort to mix with other cohorts. (For example, suspend community dining or recreational activities where ill and well would otherwise intermingle.)
- Close the facility to new admissions if the physical set-up does not allow for complete segregation between “not ill/not exposed” and “ill/exposed” cohorts.
- Symptomatic residents should remain in their assigned room until 24 hours after fever and respiratory signs and symptoms have resolved.
- Staff assigned to affected unit(s) should not rotate to unaffected units until the LHD and regional epidemiologist have determined that the outbreak is under control. This restriction includes prohibiting staff from working on unaffected units after completing their usual shift on the affected unit(s).

B. Use antivirals as indicated

- Upon laboratory confirmation of influenza A, immediately notify the facility medical director who may consider initiating antiviral chemo prophylaxis as recommended by the Centers for Disease Control and Prevention.[4] These recommendations are available at: http://www.cdc.gov/flu/professionals/infectioncontrol/longtermcare.htm

C. Maintain Standard Precautions

- Wear gloves if bare hand contact with respiratory secretions or potentially contaminated surfaces is anticipated. Dispose of gloves and wash hands after completing tasks **before** touching anything else.
- Wear a gown if soiling of clothes with a resident’s respiratory secretions is anticipated.
- Remove gloves and gowns after each resident encounter and perform hand hygiene.
- Wash hands before and after touching the resident, after touching the resident’s environment, or after touching the resident’s respiratory secretions, whether or not gloves are worn.
- When hands are visibly soiled or contaminated with respiratory secretions, wash hands with soap (either plain or antimicrobial) and water.
- If hands are not visibly soiled, wash hands with soap (either plain or antimicrobial) and water. Alternatively, use an alcohol-based hand rub.[5]

D. Maintain universal respiratory precautions (URP)

- Post signs discouraging those who are ill from visiting the facility, and instructing residents and visitors to inform health care personnel if they have symptoms of respiratory infection.
- Provide tissues and/or masks to residents and visitors who are coughing or sneezing so that they can cover their mouth and nose.
- Provide tissues and alcohol-based hand rubs in common areas and waiting rooms.
- Ensure that supplies for hand washing are available where sinks are located and provide dispensers of alcohol-based hand rubs in other locations. Provide hands-free waste receptacles as possible.
- Encourage persons who are coughing to sit at least 3 to about 6 feet from others. Residents with symptoms of respiratory infection should be discouraged from using common areas when feasible.

E. Institute droplet precautions

The following information about droplet precautions is excerpted from CDC Guidelines for Isolation Precautions.[6]

1. RESIDENT PLACEMENT- Acute care hospitals place patients who require droplet precautions in a single-patient room. In long-term care and other residential settings, make decisions regarding resident placement on a case-by-case basis, balancing infection risks to roommates with the adverse psychological impact room placement might have.
2. MASKS- Wear a surgical or procedure mask upon entering the resident's room. Remove the mask when leaving the resident's room and dispose of the mask in a waste container.
3. RESIDENT TRANSPORT- Limit transport and movement of residents outside of the room to medically necessary purposes. If transport or movement is necessary, instruct patient to wear a mask if possible and follow URP.

F. Reemphasize hand hygiene among residents, staff and visitors.

The CDC has identified hand washing as the single most important means of preventing the spread of infection at all times.[5] During the outbreak all staff, residents and visitors must be reminded to observe meticulous hand hygiene. The following points should be stressed:

- After soaping, all surfaces of the hands should be rubbed together vigorously for at least 15 seconds, then rinsed thoroughly. Hands should be dried completely, using a disposable paper towel.

- Hands should be washed before donning and after removing gloves.
- Use of an alcohol-based hand rub is an acceptable alternative to hand washing when hands are not visibly soiled.

G. <u>Provide in-service education to ALL staff on ALL shifts.</u>

- In addition to all direct caregivers employed by the facility, staff includes volunteers, private duty, contracted or agency personnel who perform housekeeping, recreational, laundry, dietary, social service, and administrative activities.
- Education is **mandatory** for all shifts, even if a staff in-service program has been completed recently.
- Place major emphasis on URP and meticulous hand hygiene since they are the most effective measures for preventing further spread. Provide information on the infecting organism and its transmission, standard and droplet precautions, and movement restriction. Advise ill staff not to provide patient care in any setting.
- Contact the LHD for facts sheets or other pertinent educational materials.

H. <u>Restrict visits from family, friends and volunteers as necessary.</u>[3]

- Visitors with respiratory symptoms should be encouraged to postpone their visit until their symptoms resolve. However, a family member determined to visit may do so under any circumstance. For such visitors, consider offering a surgical mask, and encourage them to limit their visit only to their respective family members and to minimize touching of residents and environmental surfaces.
- Post signs to reinforce infection control measures including the need to adhere to droplet precautions and perform strict hand hygiene before entering and leaving patient rooms. Signage should be eye-catching and posted at building entrances as well as outside resident rooms.
- Educate all visitors (e.g., family, friends and volunteers) of the importance of vaccination to prevent infection.

8. Evaluate the effectiveness of control measures and modify as needed.

Generally, the outbreak is considered to be over when two incubation periods have passed without a new case being identified. Waiting two incubation periods allows for recognition of potential secondary case-patients that are still asymptomatic but in whom the disease may be incubating.

- If new cases are identified after control measures have been instituted for one incubation period, continue outbreak control measures in consultation with the facility administration, LHD and the regional epidemiologist. **Evaluate and enforce adherence to infection control precautions by all staff, residents**

and visitors. Continue control measures until no new cases are identified for two incubation periods.

- When no new cases are identified after two incubation periods, control measures may be ceased. Continue active surveillance for new cases according to LHD recommendations.

9. Summarize the investigation in a written report.

- The LHD and facility shall collaborate on a final report and submit it to DHSS within 30 days of completion of the investigation. See the NJDHSS website for the report format, available at http://www.state.nj.us/health/forms/cds-30.dot (form CDS-30) and http://www.state.nj.us/health/forms/cds-30_instr.doc (instructions for completion.)

References

[1.] New Jersey Administrative Code, Title 8. Department of Health and Senior Services, Chapter 57: Communicable Diseases. Available at http://nj.gov/health/cd/documents/njac857.pdf. Accessed December 29, 2008.

[2.] Centers for Disease Control and Prevention, Prevention and Control of Influenza, MMWR Morbidity and Mortal Weekly Report. July 17, 2008; 57: early release; 1-62.

[3.] Centers for Disease Control and Prevention, Infection Control Measures for Preventing and Controlling Influenza Transmission in Long-Term Care Facilities, Available at http://www.cdc.gov/flu/professionals/infectioncontrol/longtermcare.htm. Accessed December 29, 2008.

[4.] Centers for Disease Control and Prevention, Seasonal Influenza: Interim Guidance for Antiviral Use, Available at http://www.cdc.gov/flu/professionals/antivirals/index.htm. Accessed December 29, 2008.

[5.] Centers for Disease Control and Prevention, Guideline for Hand Hygiene in Health-Care Settings, MMWR Morbidity and Mortal Weekly Report. October 26, 2002; 51:RR-16; 1-44.

[6.] Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, Centers for Disease Control and Prevention, June 2007.

Instructions for Sending Viral Respiratory Illness Specimens for Testing at NJDHSS Public Health and Environmental Laboratories (PHEL)

Specimens should arrive at the state lab between 8:00 a.m. and 2:00 p.m., Monday-Friday, excluding holidays. Specimens collected at night and on weekends or holidays should be shipped the following business day (except Friday.) Specimens must be refrigerated until shipped. If delivery will be delayed more than 24 hours, specimens should be frozen.

Collection:

1. As feasible, obtain respiratory specimens from 5 residents/staff who have become ill within the past 48 hours.* Use a viral media transport tube and the swab packaged with it. Label each transport tube w/ patient name, DOB, collection date, and assigned "E" outbreak number.
2. Follow procedures strictly since the techniques used for the collection and submission of specimens can influence the outcome of test results. See "Nasopharyngeal Specimen Collection."
3. Complete a Request for Immunological/Isolation Services (SRD-1 Form) for each specimen. The form may be downloaded at http://www.state.nj.us/health/forms/srd-1.pdf
   a. Enter the assigned "E" outbreak number in the text box entitled "Pertinent Clinical Information"
   b. In the "Test Requested" box, under "viral isolation testing," check "influenza."

Packaging:

1. Place LABELED transport tube(s), a cold pack (do not use loose ice) and the completed SRD -1 Form(s) in a box and seal with tape.

Shipping:

1. Using a courier or overnight shipping service, send the sealed box to the following address: Bruce Wolf / Virology, NJDHSS Public Health Environmental and Agricultural Lab, Specimen Receiving Unit, 3 Schwartzkopf Drive, Ewing, NJ 08628.
2. When shipping via a courier service or Fed-Ex, attach the shipping label directly to the packaging box.
3. When shipping via UPS, double boxing is required. Place the packaging box inside a second box, and attach the shipping label to the outside box.
4. If alternate arrangements for shipping are needed, call the NJDHSS IZDP during regular business hours at (609) 588-7500 and be sure to reference the assigned "E" outbreak number.

* If a rapid antigen test is done on site, a second sample should be sent to PHEL for additional testing. In order to ensure that consistent testing is performed at both the facility and reference laboratories, PHEL recommends collecting two samples **at the same time** as indicated in the instructions above. All samples should be labeled, stored and packaged appropriately as described above.

Nasopharyngeal Specimen Collection
A Guide for Providers

USE GLOVES, MASK & EYE PROTECTION

Materials:

- Sterile nylon/dacron swab with flexible stem
- Viral transport medium tube

Procedure:

1. Label transport tube with the date, patient's name & E number.
2. Incline patient's head backward at a 70° angle.
3. Insert the swab into the nostril, parallel to the palate, to the posterior nasopharynx. (Approximately the distance to the ear)
4. Leave the swab in place for several seconds to absorb secretions.
5. Slowly withdraw the swab using a rotating motion.
6. Using the same swab, repeat procedure in second nostril.
7. Place the swab tip into the labeled viral media tube and cut off the stem of the swab.
8. Cap the transport tube tightly to avoid leakage.
9. Specimens should be sent to the testing laboratory as soon as possible since test sensitivity decreases over time. Refrigerate specimens prior to shipping; freeze if shipping will be delayed over 24 hours.