Outbreak of Human Adenovirus Infection Associated with A Substance Abuse Treatment & Rehabilitation Center

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Spring Communicable Disease Forum
April 18, 2017
Background: Human Adenovirus

- Common cause of respiratory infections
  - Seven (7) Species: A-G, >51 types

- Species most associated with respiratory illness
  - B (3, 7, 14, 21)  C (1, 2,5)  E (4)

- Person-to-person spread
  - Direct: Respiratory & fecal-oral
  - Indirect: Fomites and contaminated water
    - Extremely hardy virus

Scott et al, Emerging infectious diseases 2016, 22 (6);  CDC, 2016
Background: Human Adenovirus

- Varying illness dependent on type
- Rarely cause serious illness or death
  - Infants, elderly, immunocompromised or persons with underlying cardiac or pulmonary diseases
- Sporadic outbreaks & community clusters
  - Congregate living facilities---
    - LTC facilities, Campus setting, military bases

Scott et al, Emerging infectious diseases 2016, 22 (6); CDC, 2016
Initial Information

- **February 2, 2017**
  - CCDOH notified by acute care hospital of a death in a 54 y/o male from a substance abuse treatment center
  - Second patient with similar symptoms at another acute care hospital on vent support
  - Both patients with URI, diagnosed with pneumonia & Adult Respiratory Distress Symptom (ARDS)

- **Preliminary testing**
  - Influenza A & B-----negative (patient 1 & 2)
  - Legionella-----negative (patient 1 & 2)

- **CCDOH immediately contacted facility**
  - Several patients and employees with upper respiratory symptoms
  - Linelist requested
Facility Description

- Substance Abuse Treatment and Rehab Center

- Census of 109 patients
  - Both inpatient and outpatient

- Services for both males and females
  - Separate sleeping quarters
  - Communal activities

- Patients involved in numerous activities throughout the day
  - Individual therapies
  - Group therapies
Public Health Response

- NJDOH worked with the Local Health Department to collect epidemiologic information and implement control measures

- Control Measures as per the NJDOH LTC and other Institutional Setting Respiratory Guidelines

- LHD conducted multiple site visits
  - Nursing & Environmental

- Joint call Regional Epi, LHD & Facility

- Joint conference call held with facility, LHD & NJDOH staff

- Active Surveillance for additional cases implemented
Case Definition

Probable Case:
- Acute respiratory illness
- Epidemiological link to the facility on or after Jan 18, 2017

Confirmed Case:
- Meets probable case definition
- Positive laboratory test for adenovirus
Fatalities, Hospitalizations & Lab Findings

79 Cases

- Employees
  - 20 (25%)

- Residents
  - 59 (75%)

Hospitalizations
- 4 (5%)
  - Adenovirus (+)
    - 1-Ad-B/E
    - 1-Ad-B7

Deaths
- 3 (4%)
  - Adno (+)
    - 1-Ad-B7
Epidemic Curve

Number of Reported Cases by Illness Onset Date---Adenovirus Outbreak
Cumberland County, New Jersey---- Jan-March, 2017
(N=79)
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs), median (range)</td>
<td>35</td>
<td>(18-86)</td>
</tr>
<tr>
<td>Male, no. (%)</td>
<td>47</td>
<td>(59)</td>
</tr>
<tr>
<td>Hospitalized, no. (%)</td>
<td>4</td>
<td>(5)</td>
</tr>
<tr>
<td>Died, no. (%)</td>
<td>3</td>
<td>(4)</td>
</tr>
</tbody>
</table>
# Case-Patient Clinical

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough</td>
<td>63</td>
<td>80</td>
</tr>
<tr>
<td>Nasal congestion</td>
<td>61</td>
<td>77</td>
</tr>
<tr>
<td>Fatigue</td>
<td>47</td>
<td>59</td>
</tr>
<tr>
<td>Sore throat</td>
<td>45</td>
<td>57</td>
</tr>
<tr>
<td>Myalgia</td>
<td>32</td>
<td>41</td>
</tr>
<tr>
<td>Fever</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>Rales/wheeze/rhonchi</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>SOB/Respiratory distress</td>
<td>14</td>
<td>18</td>
</tr>
</tbody>
</table>
Discussion

- Original source of outbreak unknown

- NJDOH investigated 2 similar clusters

- Community “cluster”
  - 2 NJ residents admitted to Philadelphia hospital
  - 53 y/o female---Salem county---Expired
  - 53 y/o male---Gloucester county
  - Both Ad7 positive @ CDC

- University-associated cluster
  - Participant in NJDOH Influenza Surveillance
  - 15-Adenovirus (+)
  - 7-Ad7, 1-Ad3, 1-Ad2, 6-no typing done
Discussion

- Review of surveillance systems
  - Follow-up with PH partners
  - Previous years data
    - Localized to 3 counties

- NJDOH working with CDC to further characterize these clusters and associated cases
What Worked

- Epi on-site at time of report
  - Assisted with communicating control measures, responding to questions from facility

- Collaboration by all partners

- Facility cooperative, open and receptive
  - Interested & advocating Medical Director
  - Educated staff---Monthly newsletter
  - Air filters changes
  - Terminal Cleaning
  - Smoking huts, golf carts

- Open communication—emails, phones, in-person
Gaps Identified & Solutions

- Non-reporting/Delayed reporting-facility
  - Education regarding reporting

- Specimen collection early on during outbreak onset—PHEL
  - Inclusion of Medical Director from start
  - Health working with facility/hospital upon notification

- Fully implementing control measures
  - Setting—creativity & Thinking Outside the Box
  - Restrict visitation (families), cohorting
  - Environmental remediation—(i.e. smoking huts, congregate area)
Acknowledgement

- Cumberland County Department of Health
- Hospital Infection Control Teams
  - Inspira Health Network
  - Cooper University Hospital
- NJDOH Influenza Surveillance Team
- NJDOH PHEL
- Regional Epi Program
Thank you!

Questions?