

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

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Spring Communicable Disease Forum

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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 Syndrome (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

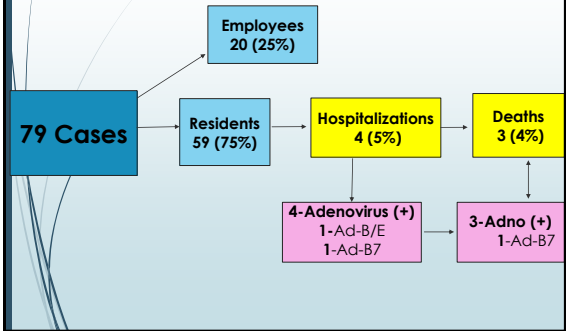
Public Health Response

- ▶ 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

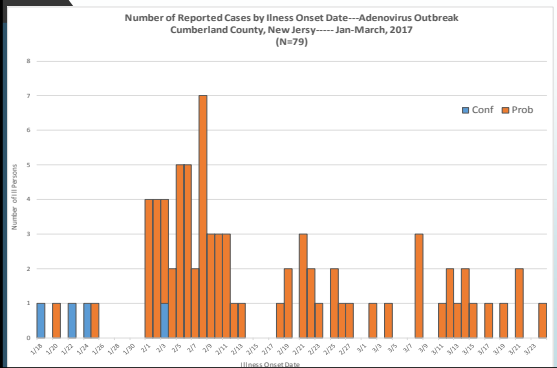
Case Definition

- ▶ **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



Epidemic Curve



Case-Patient Characteristics

N=79		
Age (yrs), median (range)	35	(18-86)
Male, no. (%)	47	(59)
Hospitalized, no. (%)	4	(5)
Died, no. (%)	3	(4)

Case-Patient Clinical

N=79		
Symptoms	No	%
Cough	63	80
Nasal congestion	61	77
Fatigue	47	59
Sore throat	45	57
Myalgia	32	41
Fever	19	24
Rales/wheeze/rhonchi	15	19
SOB/Respiratory distress	14	18

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



Photo courtesy of NJDOH Influenza team

- ▀ 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?