



## Measles: Right Here, Right Now

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## Measles Case Update




### Measles Around the World

- Measles Incidence Rate per Million (12 month period), WHO


Top 10*		
Country	Cases	Rate
United States	72428	1923.99
Germany	67028	2062.11
India	65641	61.8
France	26154	145.12
Poland	22818	401.96
Yemen	15908	383.96
Egypt	13918	40.99
Spain	7451	43.22
Indonesia	5213	83.27
Malaysia	5081	21.68

- United States measles cases, 2019**
  - Largest # of cases reported in the US since measles was declared eliminated in 2000
- Current United States measles outbreaks**
  - Rockland County, NY
  - New York City
  - Washington
  - Georgia
  - Michigan
  - New Jersey
  - California (Butte, LA, Sacramento)
  - Maryland



### 2018 Ocean County Measles Outbreak


- Case Count: 33**
  - 30 Ocean County residents
  - 3 Passaic County residents (one household with direct epi-link to Ocean County)
- Onset date range: 10/17-11/30**
- Age Distribution**
  - Age range: 6 months-59 years (mean=11.5 years)
  - Distribution
    - Under 1: 1
    - 1-5: 9
    - 5-18: 19
    - 19-29: 3
    - 30+ 1
- 52% female**
- Vaccination rates**
  - 0 MMR: 79%
  - 1 MMR: 3%
  - 2 MMR: 15%
  - Unknown vaccine status: 3%




### 2019 New Jersey Measles Cases

- Total confirmed cases: 14\***
  - 1 Bergen County resident w/ contact with a community outside NJ experiencing an ongoing outbreak
  - 1 Essex County resident w/ international travel from a country experiencing an ongoing outbreak
  - 12 outbreak-associated cases
- 2019 Ocean County measles outbreak update**

\*As of 4/24



### Measles Contact Investigations



## NJ Residents are being exposed to measles:

- **On airplanes**
- **In other states**
  - Medical facilities
  - Private events
  - Hotels
- **In other NJ jurisdictions**
- **Notified by phone, email, fax, CDC Epi-X Notification**



## Measles Flight Notifications

- NJDOH alerted of NJ residents exposed to measles on airplanes via CDC Epi-X message
- CDC has a protocol to identify passengers who may have been exposed to measles on a flight based on the disease, how it spreads, and where a passenger was seated in relation to the index patient



- For measles, passengers in the same row as the patient and two rows in front of and behind patient are the only passengers considered "at risk"
- Exceptions:
  - All travel companions of the index patient on the same flight
  - All children younger than 2 anywhere on the plane



## Contact Investigation: Exposed Individuals

- **Make initial contact with exposed individual to inform him/her of exposure**
- **Educate contacts on signs & symptoms/ what to do if they become symptomatic**
  - Call ahead **before** seeking medical attention to alert them of exposure and symptoms so arrangements can be made to prevent exposures at the facility
- **Inquire if anyone accompanied individual to the facility where exposure occurred/ if there was a babe-in-arms on the flight**
- **Assess and obtain documented evidence of immunity for all exposed individuals**
- **Consider post-exposure prophylaxis (PEP) if applicable**
  - Vaccine (within 72 hours from 1<sup>st</sup> exposure) or immune globulin (IG -within 6 days from 1<sup>st</sup> exposure)
- **Quarantine contacts without presumptive evidence of immunity**
  - Starting day 5 from 1<sup>st</sup> exposure through 21 days after last exposure
  - Consult with NJDOH before recommending quarantine
- **Provide "Exposed to Measles?" document**
- **Follow up at the end of the incubation period**
- **Return CDC form to NJDOH (not CDC) if flight notification**



## Measles Investigation Considerations and Challenges



## Challenges With Exposure Notifications

- **Patients may or may not have been notified by the exposure facility**
- **Incomplete or incorrect locating information (e.g. no phone number)**
  - Some options include searching town tax records, Google search, NJIS search, sending email, sending a certified letter, conducting a home visit
- **Concerns about period of time between exposure and notification**
- **Difficulties in obtaining documentation of immunity**
  - NJ school, college, military, OB records if woman who has been pregnant previously, other states' immunization registries, titer
- **Request for documentation from LHD re: exposure for workplace**
- **Individuals without proof of immunity unwilling to abide by quarantine recommendations**



## IgM + Electronically Entered into CDRSS

- **First call should be to ordering MD**
  - Inquire about symptoms
  - Inquire why test was ordered
- **If asymptomatic and test was ordered just to check immunity, case can be closed as "Not a Case" an MD should be educated on not ordering IgM unless suspecting disease (IgG should be specified)**
- **If symptomatic, investigate as suspect case**
  - Use Measles One Pager as an outline
  - Request appropriate testing, etc.



### Investigation Tips

- How to handle calls from non-healthcare providers re: "cases" and exposures
- Inquire about all symptoms/ symptom progression to help determine likelihood of measles
- Inquire about travel/ known exposure/ risk factors/ vaccination status
- Ask for picture of the rash (no face, no genitals)
- Work on timeline early



### Timeline

- Timeline should be compiled over course of investigation before the lab result comes back for highly suspect cases of measles
- Often this is the step that holds up public health response and public notification
- Compile list of all places suspect case visited during infectious period (4 days before rash onset through 4 days after rash onset- total of 9 days)
  - Patient should begin compiling timeline upon first LHD contact
  - Will need minute-by-minute breakdown of the 9 days
  - Important details to request: time arrived, time left, name of location, address, transportation method to/from



MEASLES TIMELINE | CDSSS ID: \_\_\_\_\_

DATE	DAY OF WEEK	LOCATION NAME AND ADDRESS	PHONE NUMBER	ARRIVAL TIME	DEPARTURE TIME	MODE OF TRANSPORTATION	COMMENTS (ADDITIONAL CONTACTS, TYPE OF EVENT, ETC.)
Day -4							
Day -3							
Day -2							
Day -1							
Onset Date							
Day +1							
Day +2							
Day +3							
Day +4							

MEASLES TIMELINE | CDSSS ID: EXAMPLE

DATE	DAY OF WEEK	LOCATION NAME AND ADDRESS	PHONE NUMBER	ARRIVAL TIME	DEPARTURE TIME	MODE OF TRANSPORTATION	COMMENTS (ADDITIONAL CONTACTS, TYPE OF EVENT, ETC.)
4/21	Tuesday-Sunday	Newark Airport, 3 Brewster Rd, Newark, NJ 07102	908-123-4567	8:00 a.m.	9:30 a.m.	NY Train from Airport to Trenton	
		Parent's House for Grandpa, 55 Main Ln, Trenton, NJ 08620		10:30 a.m.	12:45 p.m.	Private car w/ immediate family	in attendance: mom, dad, 2 weeks, 1 uncle, brother, sister-in-law, child.
		Home		1:00 p.m.	2:45 p.m.	Private car w/ immediate family	
		Target, 1 Billerica Dr, Trenton, NJ 08620	609-232-2222	2:45 p.m.	2:55 p.m.	Private car	
		Brook's House for Grandpa, 1212 Pop Dr, Hagglyville, PA 12122		4:00 p.m.	7:30 p.m.	Private car w/ immediate family	in attendance: brother-in-law, father-in-law, great uncle, great aunt
		Home		8:30 p.m. on		Private car w/ immediate family	
4/22	Monday	ABC Dryclean, 18 Elm St, Trenton, NJ 08620	609-333-3333	7:20 a.m.	7:30 a.m.	Private car w/ child	
		Radiology LLC, 123 Main St, Trenton, NJ 08620	609-444-4444	7:45 a.m.	8:20 a.m.	Private car	
		Manhattan Bagel Shopper at Plaza, 21 West Grand Way, Trenton, NJ 08620	609-555-5555	8:30 a.m.	8:40 a.m.	Private car	
		Parking Garage, NJ Montgomery St, Trenton, NJ 08620		8:50 a.m.	8:55 a.m.	Private car	
		MEASLES 123 E. State St, Trenton, NJ 08620	609-626-6264	9:00 a.m.	5:15 p.m.	Walking	
		Parking Garage, NJ Montgomery St, Trenton, NJ 08620		5:15 p.m.	5:20 p.m.	Walking	
		Dunkin' Donuts, 20 Main St, Trenton, NJ 08620	609-777-7777	5:40 p.m.	5:45 p.m.	Private car	Dunkin' Donuts located inside of Shoprite.
		Home		6:05 p.m. on		Private car	

### Specimen Collection

- NP swab, urine, and blood should be collected on all suspect measles cases
- Viral specimens (NP swab and urine) can only be tested at CDC/CDC Reference Laboratory
- NJDOH approval is needed to send viral specimens to CDC for testing
- If specimen is approved for testing, many options for sending specimens
  - FedEx, if available
  - State courier
    - Scheduled courier pickup sites
  - Private courier
- LHDs to help medical facilities coordinate specimen transport



**New Resources Available**

**THINK MEASLES.**  
Measles is common in Europe, Asia, the Pacific, and Africa.

**BEFORE YOU TRAVEL:** Call your doctor before you travel to Europe, Asia, the Pacific, or Africa. Get vaccinated if you are not up to date.

**AFTER YOU TRAVEL:** Call your doctor if you are planning an international trip. Get vaccinated if you are not up to date.

Talk with your doctor if you are planning an international trip.

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[https://nj.gov/health/od/documents/topics/measles/measles\\_travel\\_flyer.pdf](https://nj.gov/health/od/documents/topics/measles/measles_travel flyer.pdf)

**Measles Outbreak Check List**  
Updated April 11, 2019

**Checklist:**

1. Review of health care personnel (HCP) training requirements (CDC/ACIP) in the at-risk area.
2. Review of health care personnel (HCP) training records to verify that all HCP are trained. Call your doctor if you are not up to date.
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[https://nj.gov/health/od/documents/topics/measles/measles\\_ab\\_guide.pdf](https://nj.gov/health/od/documents/topics/measles/measles_ab_guide.pdf)

**Resources Available**

- NJDOH website: <https://www.state.nj.us/health/cd/topics/measles.shtml>
- “Exposed to Measles?” document: [https://www.state.nj.us/health/cd/documents/topics/measles/measles\\_exposure\\_guidance\\_public.pdf](https://www.state.nj.us/health/cd/documents/topics/measles/measles_exposure_guidance_public.pdf)
- CDC website: <https://www.cdc.gov/measles/index.html>
- CDC measles cases & outbreaks page: <https://www.cdc.gov/measles/cases-outbreaks.html>

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**Thank You!**

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**NJ Health**  
New Jersey Department of Health

**Offering Clarity in Crisis:  
Investigation of Severe and Fatal  
Pediatric Influenza**

Spring 2019 Communicable Disease Forum – Northeast Region

Janet Castro, MPH | Health Officer, North Bergen Health Department  
Julia Wells, MPH | Regional Epidemiologist, NJDOH CDS

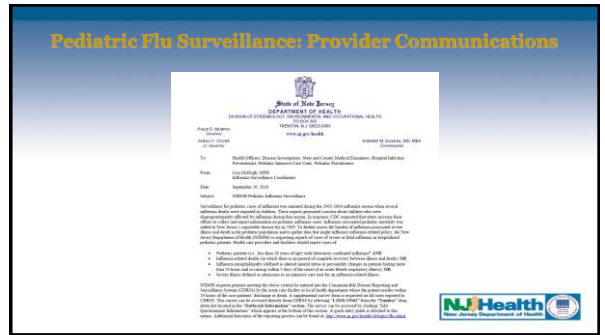
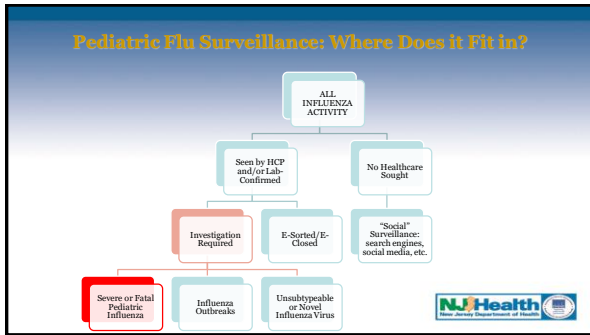
**NORTH BERGEN**

**NJ Health**  
New Jersey Department of Health

**Overview**

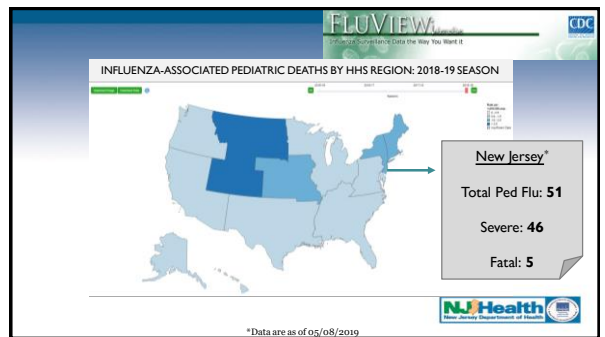
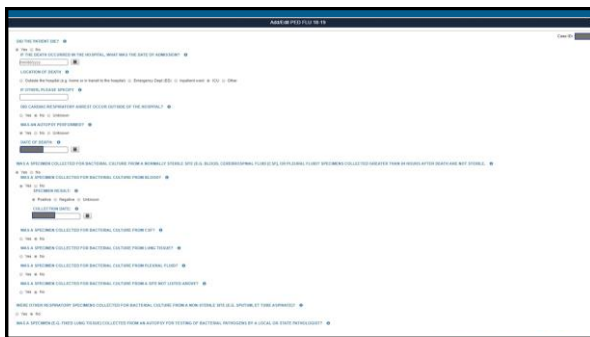
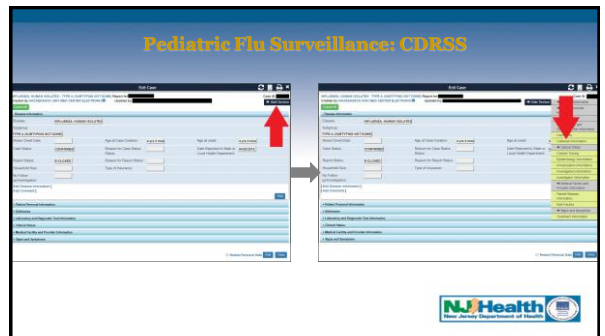
- Definitions & Reporting
- State and National Surveillance
- The “Why”
- Case Background
- Action Steps & Timeline
- Challenges
- Lessons Learned
- Q&A

**NJ Health**  
New Jersey Department of Health



### Pediatric Flu Surveillance: Definitions

<p><b>SEVERE</b></p> <ul style="list-style-type: none"> <li>(+) Influenza lab test</li> <li>Aged &lt; 18 years</li> <li>Admission to ICU/PICU/NICU OR</li> <li>Influenza encephalopathy               <ul style="list-style-type: none"> <li>AMS or personality change &gt;24 hours</li> <li>Onset w/in 5 days of ILI</li> </ul> </li> </ul>	<p><b>FATAL</b></p> <ul style="list-style-type: none"> <li>(+) Influenza lab test</li> <li>Aged &lt; 18 years</li> <li>Death occurring after onset of ILI               <ul style="list-style-type: none"> <li>Important: no period of recovery between ILI onset and death</li> <li>Surveillance criteria ≠ death certificate and/or M.E. findings</li> </ul> </li> </ul>
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### What Do We Learn from Looking?

- Identification of risk factors
- Epidemiology characterizes target population
- Enhanced laboratory testing
- History of vaccination
- Coinfections



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### Investigation



### Notification of Death of 6 Year Old Resident – suspected flu death

- In February, Health Officer was contacted by Mayor regarding a critically ill child who was a resident and student in North Bergen school district
  - Reports on social media as well and information grew very quickly
- Flu was suspected, but not yet confirmed
- No official notification to health department from hospital or lab, but most flu is not immediately reportable
- Metro NYC news stations began reporting death of the child on evening newscasts the next day
  - Interviewed District Superintendent as part of newscasts



### Collaboration with Key Partners

- Upon notification of the child's death, NBHD, Mayor's Office, School District, North Hudson Community Action Corp, NJDOH and HRHC began collaborating and preparing response
- Multidisciplinary response was needed
- Action Items Included:
  - Obtaining vaccine and other necessary supplies
  - Preparing parent letter and vaccine consent form in English and Spanish
  - Scheduling vaccination clinic staff
  - Conducting district-wide flu vaccination clinics in schools and scheduling community flu clinics
  - Developing risk communication response
  - Establish record keeping protocol



### Risk Communication Response

- We knew the death of a child would result in great concern within the school community and the community in general
- Metro news picked up the story on the day the child passed
- Superintendent agreed to a media presence at the first school based flu clinic at the school that the child had attended
- Upon arrival, the Health Officer, Superintendent, Board of Ed and county LINC Agency HERC conferred to discuss a unified, consistent message
  - No one would reveal identity, vaccine status, health history – all protected information
- Determined who would discuss what:
  - Superintendent/Board of Education role – ie: cleaning, schools remaining open
  - Health Officer: Health Department Response – school based clinics; community clinic
  - HERC: General flu messaging including prevention, vaccine effectiveness, etc.
- Multiple local and metropolitan media outlets were present



### Development of Required Documents

- Worked with Regional Epidemiologist, NJDOH to develop:
  - Parent Letter
    - Needed to explain what happened and how town and district were responding
    - Included some risk communication
  - Vaccination Consent Form
- Had to develop both from scratch; took full day
- Needed to be at proper literacy level and in both English and Spanish
- Documents distributed in schools Wednesday; return date Thursday – date of first clinics



### Clinic Demand and Logistics

- Health Officer worked with Board of Education physician to purchase vaccine
- Estimated need was 15% of student population per school
  - Initial order was 300 vaccines
- Related supplies would be provided by North Hudson Community Action Corp (NHCAC)
- North Hudson Community Action Corp is the contractual provider of Public Health Nursing for North Bergen Health Department
- Four nurses were provided on the first clinic day
  - Split between two schools, but combined resources later that morning
  - Did not plan for "vaccination assistants" at this time
- Additional staff included school support staff and Medical Reserve Corps
  - School Nurse performed Triage in hallway
  - Medical Reserve Corps vaccinated and were vaccination assistants also



### Clinic Flow & Demand for Vaccine

- Modeled on NJDOH "JEM Flow Model"
- It took a Village! A team of ~15 people worked all aspects of clinic
- Throughput highly dependent upon student flow; schools had to have student groups ready and waiting.
- A total of 1,463 (1434 children + 29 adult) vaccines were administered in 9 schools and 3 Adult Community Clinics.
- Elementary School (K-6)
  - 218 vaccinations administered in 2 hrs 15 mins
  - Represented 20% of student population
  - Throughput was 32 vaccinations/hour/line with excellent flow
- High School (9-12)
  - 298 vaccinations administered in 5 hours; represented 13% of student population
  - Throughput was 32 vaccinations/hour/line with intermittent flow



### Lessons Learned

- The situation took on a life of its own; Social Media played a huge role
- Be prepared for large media response
- Desire to receive vaccination at school based clinics was underestimated
  - Initial estimates were 10-15% of school population
  - Resulted in additional vaccine orders needing to be placed
  - Clinics occurred before and after Winter Break and Federal Holiday which impacted delivery of vaccines
- Screening and consent form had to be developed on the fly, in both English and Spanish with appropriate reading level
- Initial clinical staffing resources weren't enough
- Would be good to have something to occupy younger students during observation period
- Making multiple copies of forms proved difficult during clinic operations
- Clinic flow was largely dependent on organization of students' arrival in groups – probably more so than age



### Areas for Improvement/Recommendations

- Consider a Social Media presence if you do not already have one. This is the way information is shared now, but also good for public health to monitor to get a sense of residents' questions, concerns, and misunderstandings
  - Explore viability of Social Media presence in your organization. Research whether Facebook or Twitter is best within your community. Blogs as well.
- Vaccine supply was exhausted quickly. Waiting for delivery of additional vaccine slowed down clinic flow
  - Consider ordering a small amount above estimated requirements
- Needed screening and consent form prior to clinic activation
  - Develop templates in advance in both English and predominant language(s) for your area



### Areas for Improvement/Recommendations

- Underestimated staffing needs
  - Consider MRC Volunteers early as vaccinators and vaccinator assistants as scribes and supplies assistants
  - Use labels with vaccine information to eliminate need to write it all down on form
- Plan for activities for youngest students during observation period
  - Bring coloring pages, crayons, temporary tattoos, stickers, etc to occupy children
- Plan for form requirements
  - Utilize NCR Forms with correct number of layers to avoid having to copy during clinic
- Student presence needs to be more organized to ensure timely flow
  - Work closely with individual schools to ensure students are brought to clinic area consistently throughout day to avoid intermittent flow



### Challenges

- Dispelling the outbreak myth
- Dispelling the "rare/novel/deadly strain" myth
- Are severe and pediatric flu cases a proxy for flu season severity?
- Balancing proactive health education vs. reinforcing existing fears
- "This child died from the flu"
- Why wasn't I notified [sooner]?!



### What are your “next actions?”

- **What are you doing to educate your community?**
- **What resources do you have?**
  - Are you promoting them before an event occurs?
  - Consider establishing a social media presence “in fair weather”
- **Where are your gaps?**
  - Under-served or at-risk communities
  - Language barriers
- **Establish a social media presence when “things are good”**
- **Identify community liaisons with established trust**



### Resources for LHDs & HCPs

- **CDS Influenza Home Page:** <https://nj.gov/health/cd/topics/flu.shtml>
- **CDS School Health Page:** <https://nj.gov/health/cd/topics/schoolhealth.shtml>



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### Questions and Suggestions

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