



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


Country	Cases	Rate
United States	22409	1023.95
United Kingdom	69719	2903.51
France	49681	182.8
Italy	25241	146.72
Poland	34938	187.36
Germany	18608	80.92
Spain	10919	40.95
Japan	7461	40.22
Sweden	1013	60.72
Belgium	5801	21.48

- 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
 - Michigan
 - New Jersey
 - Butte County, CA



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



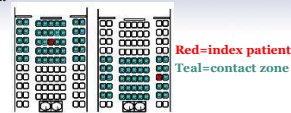
NJ Residents are being exposed to measles:

- **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 1st exposure) or immune globulin (IG -within 6 days from 1st exposure)
- **Quarantine contacts without presumptive evidence of immunity**
 - Starting day 5 from 1st 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

- 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 | CDRSS 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 | CDRSS 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	8:05 a.m.	9:30 a.m.	NY Train from Airport to Trenton	
		Parent's House for Grandpa, 55 Main Ln, Trenton, NJ 08620		10:50 a.m.	12:45 p.m.	Private car w/ immediate family	in attendance: cousin, aunt, 2 aunts, 2 uncles, brother, sister-in-law, child.
		Home		1:00 p.m.	2:45 p.m.	Private car w/ immediate family	
		Target, 1 Boulevard Dr, Trenton, NJ 08620	609-232-2222	2:45 p.m.	2:55 p.m.	Private car w/ immediate family	
		Broccoli House for dinner, 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	
		NECOTE, 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 shop site.
		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



Local Health Department Responsibility – Foodborne Outbreaks

- Determine whether a single case or an outbreak of disease exists.
- Ascertain the source and spread of the infection.
- Determine and implement appropriate control measures.



Health Officer

- May prohibit a person infected with a communicable disease which may be transmitted through food from working with food.
- May prohibit a household contact of an infected person from working with food.
- May require a person who is employed in a food establishment who is suspected of being infected with a communicable disease that may be transmitted through food, to submit specimens to ascertain whether or not the person is infected.
- May prohibit sale or distribution of food prepared by a person who is ill or infected with a communicable disease which may be transmitted through food.



Reporting: New Jersey Administrative Code (NJAC) 8:57

- Regulations require reporting and investigation of certain communicable diseases and outbreaks for the purpose of surveillance and public health intervention.
- Cases should be reported to the local health department where the patient resides.
- Must be reported via telephone!
- Call NJDOH for immediately reportable diseases!
 - (609) 826-5964 (M-F 8am-5pm)
 - (609) 392-2020 (After 5pm and Holidays)



Foodborne Outbreak Definition

- Two or more persons experiencing a similar illness after ingestion of a common food or different food from a common source, or report of cases of a disease in excess of what is normally expected
- Note: exception- household clusters



LHD Investigation

- Notify NJDOH Communicable Disease Service
- Confirm that the reported seven individuals were ill
 - Gather names and contact info of ill individuals
 - Confirm onset and symptoms
- Initiate site visit to the venue
 - Inspect kitchen and food handling practices
 - Obtain event menus
 - Inquire about other events and ill food handlers



Confirming Illness

- 11/28/18: SCHD obtains the names and contact info of 16/128 guests
 - 11 have been contacted
 - 5 were ill
 - 6 were not ill
 - 5 were left voicemails
- The bride, groom, and parents of bride were not ill



Line List

- 5 confirmed ill individuals
 - 4 in the wedding party, 1 was the girlfriend of guest in wedding party
- Reported symptoms are nausea, vomiting, diarrhea, fever, headache, and muscle aches
- All cases became ill in the evening of 11/26/18
- A rehearsal dinner at a second venue is also reported
- No one has sought medical care = no stool samples

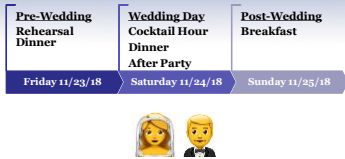


Site Visit

- 11/28/18: REHS makes site visit to the wedding venue
 - Food manager reports no sick employees
 - Inquires what other events were catered that weekend
 - 11/23/18 – Wedding of 126 guests
 - Venue reports no complaints of illness from guests
 - REHS obtains menus from event



Wedding Weekend



Rehearsal Dinner (11/23/18)

- Held at a restaurant in Morris County
- 25 attendees
- Upon checking with restaurant, no complaints received regarding illness
- Same package menu served two other times that weekend



Wedding Day (11/24/18)

- Venue in Vernon, Sussex County
 - Wedding Cocktail Hour (5 – 6 pm)
 - Wedding Dinner (6 – 10 pm)
 - After Party (10 pm – 12 am)
- 128 wedding guests



Post-Wedding Breakfast (11/25/18)

- At wedding venue
- 72 attendees
- Continental breakfast



NJDOH Notification

11/28/18: NJDOH Regional Epi received notification from SCHED that there were reports of GI illness among a wedding party

↓


SCHED notifies Regional Epi of REHS site visit

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Regional Epi asks SCHED to confirm illness and obtain menus from event


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REP notifies the CDS Foodborne Coordinator Subject Matter Expert (SME) of the situation







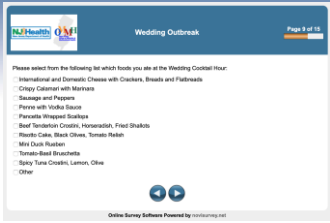

Communication

- Regional Epi and SME have a meeting to discuss next steps based on the information being gathered
- If wedding party confirms illness, a survey will be created once menus and full guest list is obtained
- Survey will be sent to all wedding guests to determine full extent of outbreak




The Survey

- CDS and SCHED agree to administer survey to wedding guests to gather more information on who ate what
- The Foodborne Disease Program creates the online survey and it is ready for distribution on 11/30/18

But...

- Only thing missing is contact information for all guests
- The bride and groom are on their honeymoon – unlikely to respond until they return
- Mother and father of the bride do not have guest list
- What to do now?!



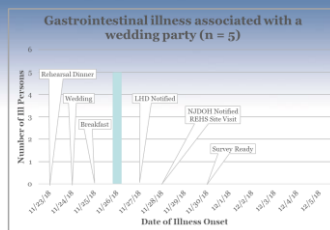
Guest List

- Don't want to wait too long, otherwise guests will forget details of what they ate and their illness!
- 11/29/18: SCHED attempts to email the bride to see if she can provide guest list information while on honeymoon
 - Names
 - Emails/Phone Numbers
 - Events attended



Unfortunately...

- No email response was received from the bride
- SCHED placed phone call to the father of the bride
 - Bride had returned from her honeymoon on 12/4/18
 - Father says its up to bride to pursue
- 12/5/18 SCHED left a voicemail for bride
 - No response was received
- Survey was not administered



What could be the culprit?

- Guests reported becoming ill within 2 days and symptoms resolving within 1-2 days
- 60% of ill reported diarrhea, 80% of ill were vomiting
- No testing was performed
- With this information, we could not determine the responsible pathogen



Lessons Learned

- Surveys can be useful tools if reaching the targeted audience
- Understanding when to pursue an investigation
 - Use of resources
 - No guarantee that data will be collected



Resources

- NJDOH Foodborne Illness Page:
 - <https://www.nj.gov/health/cd/topics/foodborne.shtml>
- CDC Foodborne Illness Page:
 - <https://www.cdc.gov/foodsafety/foodborne-germs.html>
- Food Safety Tips:
 - <https://www.cdc.gov/foodsafety/keep-food-safe.html>




Thank You!

Questions?

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The logo for NJ Health, featuring the text "NJ Health" in a bold, sans-serif font, with "New Jersey Department of Health" in a smaller font below it. To the right of the text is a circular emblem containing a stylized figure.