Measles Overview: 2024

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Presentation Overview

- Measles Case Overview – May 2023
- Contact Investigation Testing Guidance
- Testing for Measles
- Case Scenarios

Measles Case Overview – May 2023

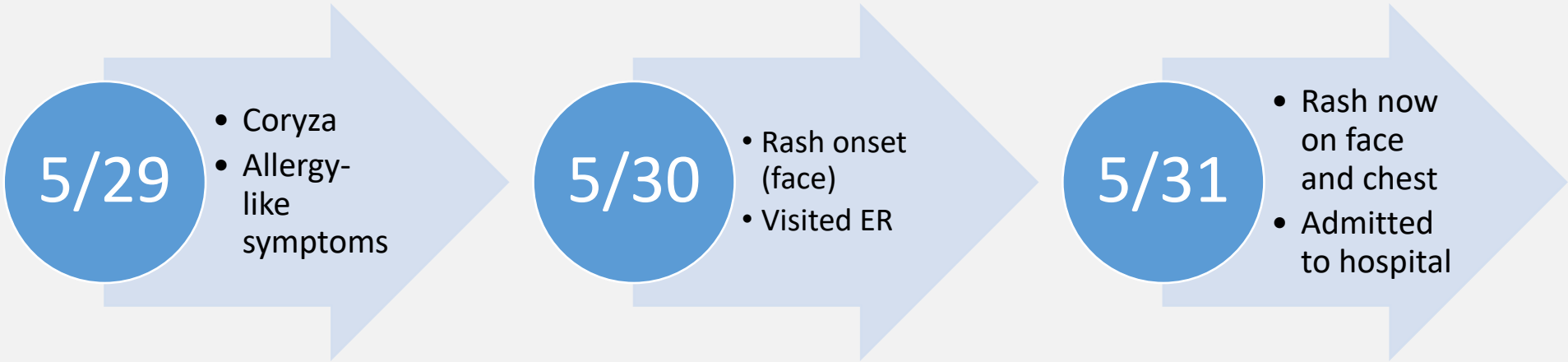
Initial Notification

- A Tarrant County hospital submitted a measles PCR specimen to the DSHS State Lab without the LHD's awareness
- EAIDU-VPD Team contacted Region 2/3 to gather more information, such as symptoms, onset date(s), demographics, travel history, vaccine history, sick contacts, etc.
- Hospital records indicated the child was a resident of a rural county in Region 2/3

Epidemiological Information

- 21-month-old female
- Received first measles-mumps-rubella (MMR) vaccine in October 2022
- Hospitalized for 3 days
- Symptoms: rash, fever (max 100.3°F), cough, diarrhea, decreased oral intake and urine output, oral ulcers/mouth sores, coryza
- Mother of case reported no potential exposures including travel, visitors, daycare, sick contacts, healthcare facilities, large gatherings, events, or church

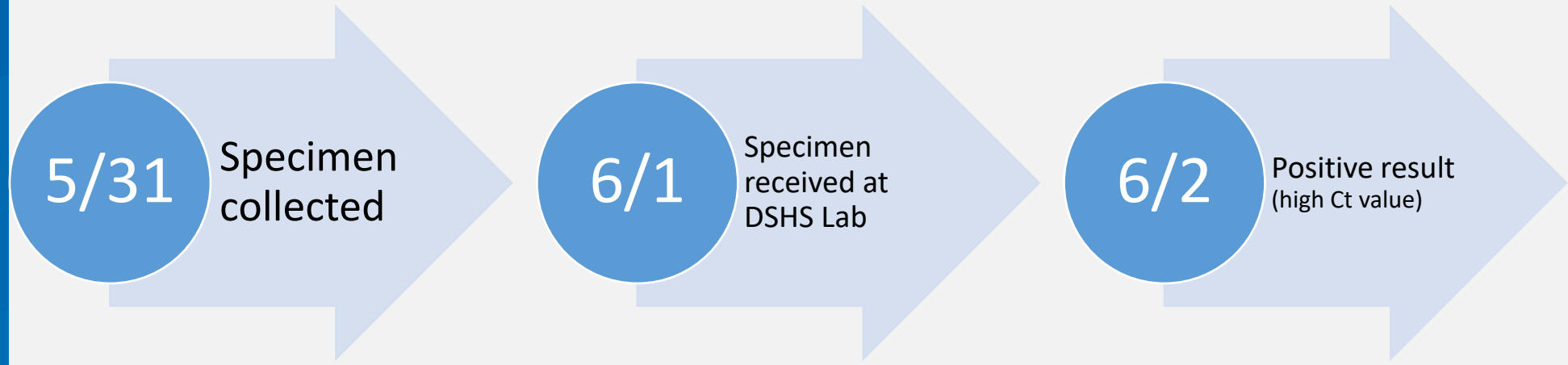
Timeline of disease progression



Hospital Testing Information

- All labs collected 5/31/2023
  - Measles IgM was negative
    - 0.64 AU/mL (negative, ref range 0.79 AU/mL or less)
  - Measles IgG was positive
    - >300 AU/mL (positive = 16.5 AU/mL or greater)
  - Positive for herpes simplex virus type 1 (HSV-1) by PCR

Timeline of DSHS testing



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What does a “high Ct value” mean?

- PCR tests run by repeatedly replicating (“amplifying”) (ribo)nucleic acid fragments
- To replicate the RNA enough times to run the test properly, it goes through (replication) cycles
- Labs have a cutoff for the cycle threshold (Ct) – maximum number of cycles allowed – to determine if the sample is above the background signal or not
- If the Ct value is exceeded, the test result is negative/not detected
- In this case, the instrument had to run nearly the maximum number of cycles to replicate enough RNA to look for measles RNA

What does this have to do with this case and the case status?

- The case still meets the confirmed case status, regardless, as the PCR test was positive
- Confirmed measles case status:
    - An acute, febrile rash illness (temperature can be lower than 101^{o}F and rash < 3 days) that is:
        - Laboratory confirmed
            - Detection of measles-virus-specific nucleic acid by PCR, Isolation of measles virus from a clinical specimen, IgG seroconversion, or positive serological test for measles immunoglobulin M antibody

        OR

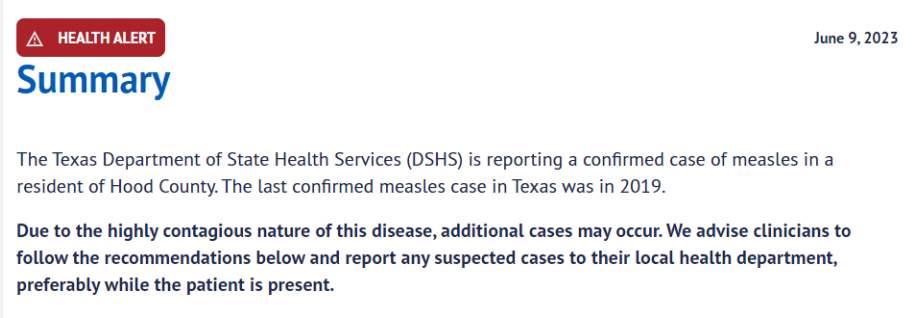
        - Epidemiologically linked to a laboratory confirmed measles case

Genotyping

- On 6/5/2023, the DSHS Lab shipped the measles specimen to the Minnesota Public Health Lab (MPHL) for genotyping
  - Wild-type vs. vaccine strain
- MPHL only performed genotyping and did not perform confirmatory PCR testing
- Performed the Measles Vaccine Assay (MeVA), but MPHL was not able to complete sequencing the specimen
  - Result: unknown strain
    - New specimen collection was not recommended

Health Alert Released

- DSHS and partners agreed to release the health alert based on the MPHL genotyping results
- Since MPHL could not rule out wild-type strain, a health alert was warranted
- On 6/9/2023, DSHS released a health alert regarding the confirmed measles case from Hood County



HEALTH ALERT

June 9, 2023

Summary

The Texas Department of State Health Services (DSHS) is reporting a confirmed case of measles in a resident of Hood County. The last confirmed measles case in Texas was in 2019.

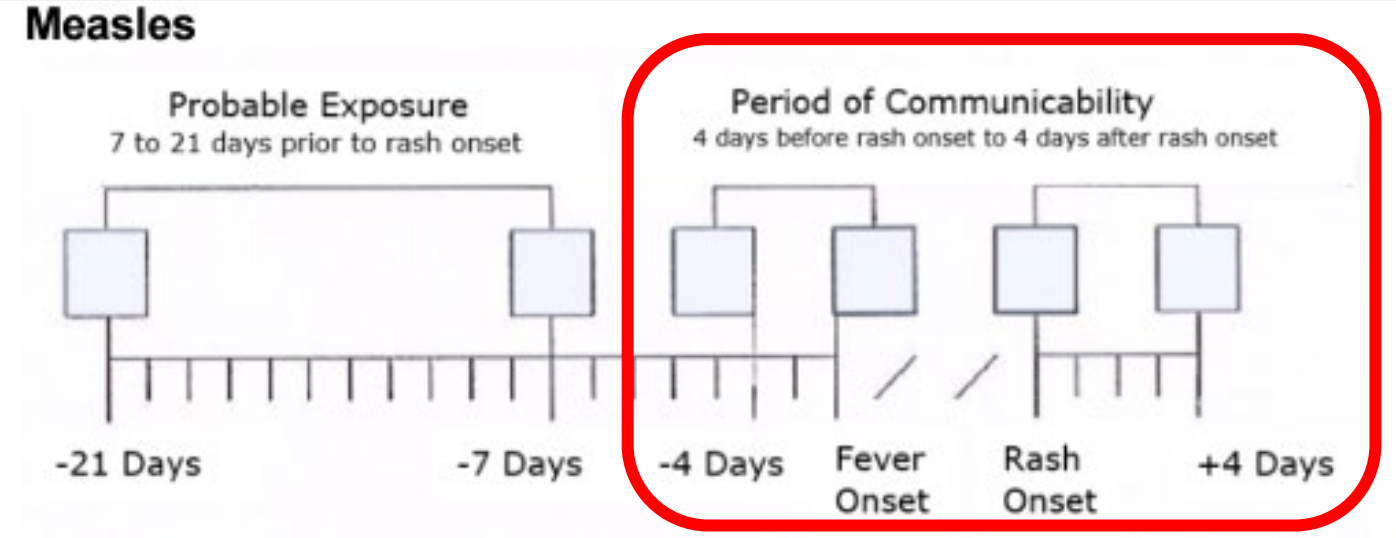
Due to the highly contagious nature of this disease, additional cases may occur. We advise clinicians to follow the recommendations below and report any suspected cases to their local health department, preferably while the patient is present.

https://www.dshs.texas.gov/news-alerts

Contact Investigation Testing Guidance

Who is considered potentially exposed?

- The measles virus can suspend in the air for up to 2 hours after the infectious person leaves the room
  - All people in the room with the person and for 2 hours after should be assessed for the contact investigation



Source: https://www.cdc.gov/infection-control/hcp/healthcare-personnel-epidemiology-control/measles.html. Date accessed 7/12/2024.

When & how to test contacts

1. If any contact develops measles-compatible symptoms within the timeline for measles (7-21 days after exposure to confirmed case), then measles testing coordination is needed immediately.
2. Contact your regional health department and the EAIDU-VPD Team with a situation update and to request testing at the DSHS Lab.
3. Coordinate with the healthcare facility for specimen collection including form completion, materials used, specimen information, and shipping properly (temperature, delivery date, method, etc.).
4. The EAIDU-VPD Team will communicate with you about the specimen's arrival and final lab result.

Who was exposed to the confirmed case? Family

- Case had three household contacts
  - 3yo sibling
    - 1 MMR
- Mother
  - No documentation of vaccination
  - Recommended to reach out to OBGYN and ask if titers were run during pregnancy
- Grandmother
  - Reportedly current with vaccines

Who was exposed to the confirmed case? Patients & staff

- Two different healthcare facilities visited by the confirmed case while infectious
  - Other patient and staff exposures
    - First healthcare facility (visited 5/30/2023)
      - 14 employees, 4 EMS, 10 patients exposed
    - Second healthcare facility (visited 5/31/2023)
      - 18 employees, 140 patients

One suspect case identified from contact investigation

- 5/31/2023 – Direct contact with confirmed case
- 6/11/2023 – Began experiencing rash starting on forehead, fever, and ear pain
- 6/13/2023 – Region 2/3 informed of her symptoms
- Received two MMRs in 2022 and demonstrated a positive measles titer

Outcome of measles contact investigation

- One healthcare worker tested and was negative
- Monitoring continued through 6/23/2023 with no other suspected cases

Testing for Measles

Where to get suspect cases tested

- DSHS Lab in Austin (preferred, especially if vaccinated)
  - Confirmatory PCR testing
  - Once received at the lab, results in ~48 hours
  - Public health is the first to receive the results
- Commercial labs
  - Associated with hospitals, private practices, urgent care centers, etc.
  - Usually perform serology only
  - Quest performs measles PCR testing, but results can take up to one week

Dos & Don’ts of testing at the DSHS Lab

Do

- Ensure your health department has unexpired, appropriate collection materials prior to needing them
- Review the Measles Viral Specimen Collection – PCR Testing protocol and share with major healthcare facilities
- Ask to review the G2V before shipment with the facility to ensure accuracy and completeness

Don’t

- Forget how hot Texas weather can be, especially during transportation – use dry ice if possible
- Ship packages for arrival on a weekend or holiday

Dos & Don’ts of testing at commercial labs

Do

- Manage your expectations
  - Most commercial facilities only perform serology and results may take 5-7 days turnaround time
  - False negatives and false positives more common than with PCR testing
- Act immediately on any positive result
- Encourage the lab to forward the specimen to the DSHS Lab for confirmatory PCR testing

Don’t

- Rely solely on the lab result
- If the symptoms are compatible with measles and the suspect case has other suspicious factors (not vaccinated, recent international travel, sick contacts, etc.), encourage PCR testing at the DSHS Lab
- Assume the provider knows the DSHS Lab offers PCR testing and/or will submit a positive measles IgM result for confirmation

Case Scenarios

How suspicious are these patients for measles?

Suspect case #1

- 11-month-old female
- Seen at pediatrician's office for rash on face and trunk, 104°F fever, cough, runny nose
- Returned from Iraq 10 days ago
- Labs: rapid flu negative, respiratory panel pending

How suspicious is this for measles?

Very, very high suspicion

Suspect case #2

- 22yo male
- Arrived at an urgent care for sore throat, dry cough, fever of 102°F, itchy eyes, nasal drainage, congestion, sneezing, and a rash on his face
- Received two MMR vaccines three years ago in response to a low measles titer
- Recently babysat his niece, who recently returned from Florida
- No recent travel
- Lab: rapid Strep negative

How suspicious is this for measles?

Moderate suspicion

Suspect case #3

- 4yo female
- Seen at the emergency room for rash and fever of 101°F
- Vaccination status is unknown
- Recently traveled to Chicago, no sick contacts
- Labs: measles IgG and IgM pending

How suspicious is this for measles?

Low to moderate suspicion

Suspect case #4

- 72yo female
- Hospitalized for fever, rash on trunk and legs, shortness of breath, runny nose, and cough
- Comorbidities: diabetes, chronic obstructive pulmonary disease (COPD), arthritis, high blood pressure
- Denies travel, sick contacts
- Labs: measles IgG positive, IgM pending

How suspicious is this for measles?

Very, very low suspicion

Thank you!

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