Laboratory Outreach Communication System (LOCS) Call

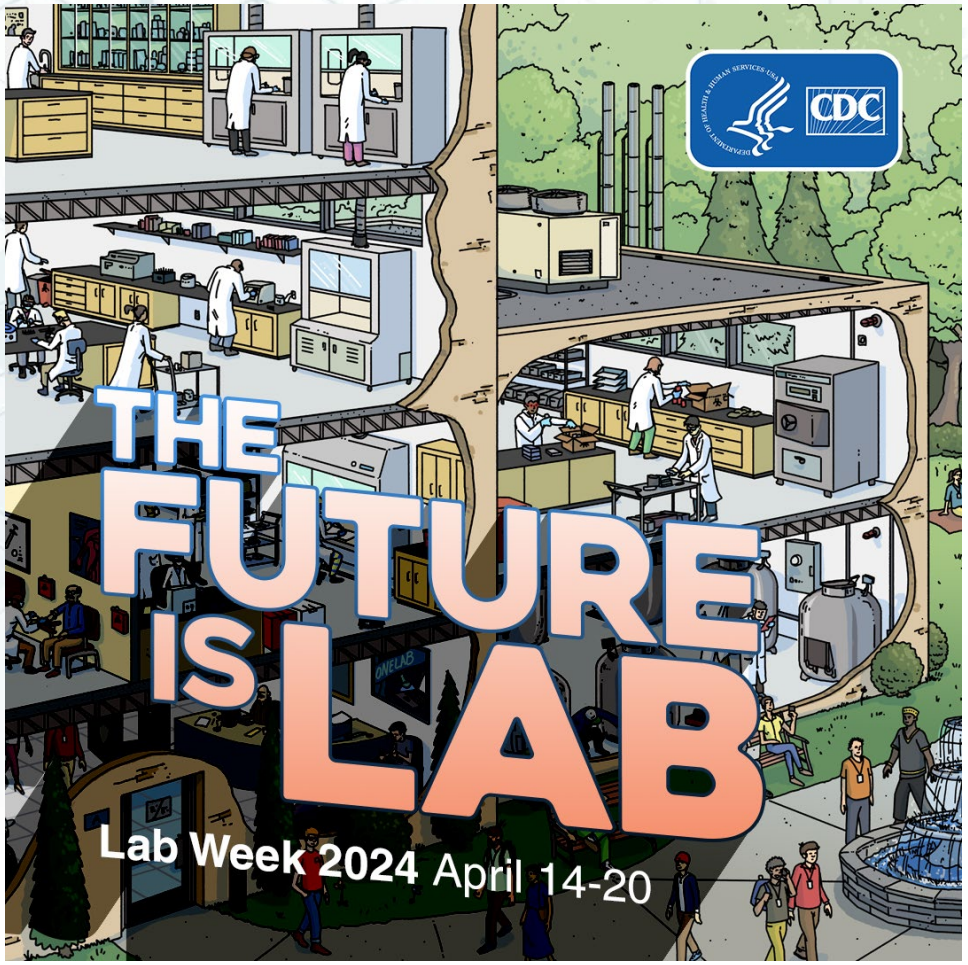
Monday, April 15, 2024, at 3:00 P.M. ET

- **Welcome**
  - Jasmine Chaitram, CDC Division of Laboratory Systems
- **Opening Remarks**
  - Reynolds M. Salerno, CDC Acting Associate Director for Laboratory Science and Safety
- **Announcements**
  - Jasmine Chaitram, CDC Division of Laboratory Systems
- **Situation Report and Testing Guidance for the Influenza A/H5 Outbreak**
  - John Barnes, CDC Influenza Division
- **Update on Testing for Measles**
  - Stephen Crooke and Paul Rota, CDC Division of Viral Diseases

Opening Remarks

Reynolds M. Salerno, PhD
Acting Associate Director for Laboratory Science and Safety
Centers for Disease Control and Prevention

Medical Laboratory Professionals Week: April 14-20



Join DLS in celebrating Lab Week 2024 by

- Showing thanks to a laboratory professional
- Participating in DLS's Lab Week activities
- Accessing our digital toolkit and content

https://www.cdc.gov/lab-week/index.html

Announcements

Jasmine Chaitram, MPH, MT(ASCP)
CDC Division of Laboratory Systems

OneLab **Summit**

REGISTER **NOW!**

OneLab **Summit**

Thrive: People. Planning. Preparedness.

APRIL 16-18, 2024

A THREE-DAY VIRTUAL LEARNING EVENT

CREATED FOR LABORATORY PROFESSIONALS WHERE ATTENDEES WILL:

- Increase their knowledge of laboratory training development tools and practices
- Gain insights from the clinical and public health laboratory community's success and resilience
- Collaborate and connect with CDC and laboratory education and training peers

REGISTRATION **IS LIVE**! https://reach.cdc.gov/onelabsummit

DLS ECHO Biosafety Program

- **Next Session -** April 30
- **Topic of Discussion -** Planning: Developing and Achieving Biorisk Management Objectives
- **Questions?** Contact DLSbiosafety@cdc.gov

Visit the website for details on upcoming sessions and resources from past sessions:
www.cdc.gov/safelabs/resources-tools/echo-biosafety.html

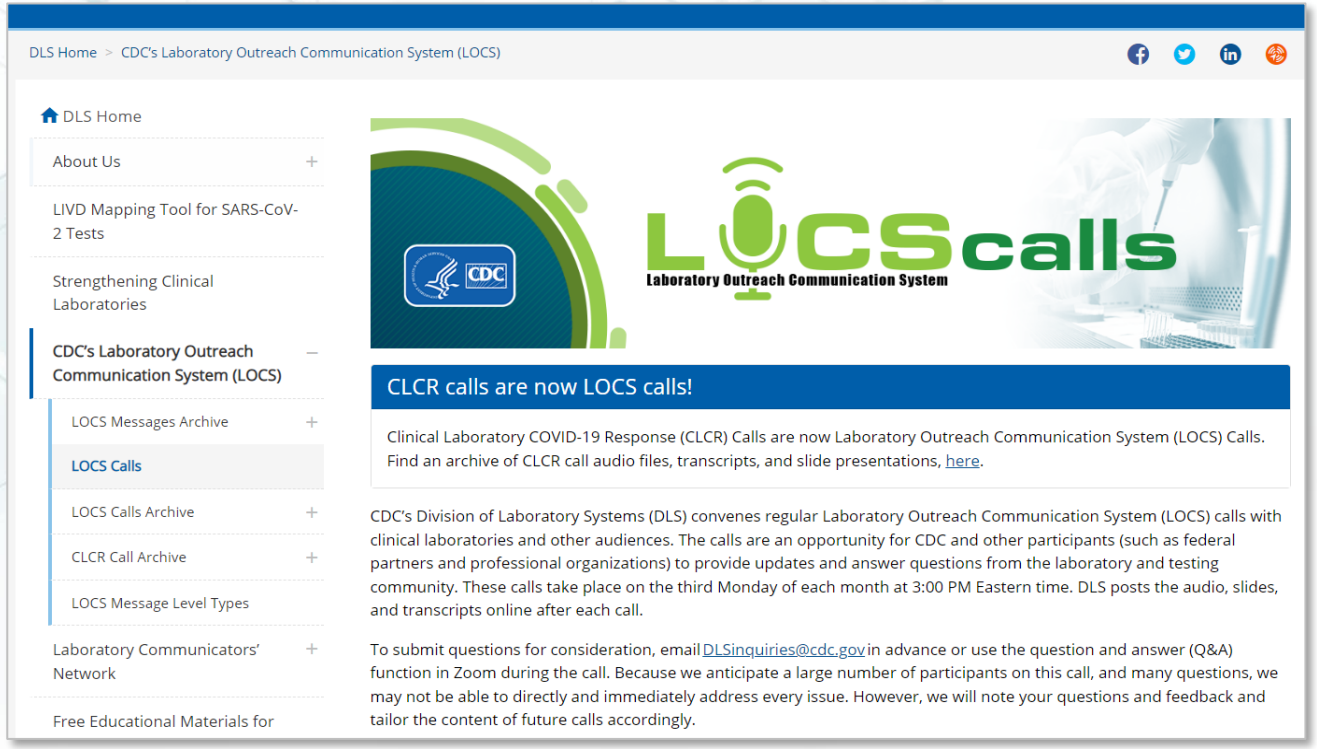
We Want to Hear From You!

Training and Workforce Development

Questions about education and training?

Contact LabTrainingNeeds@cdc.gov

LOCS Calls



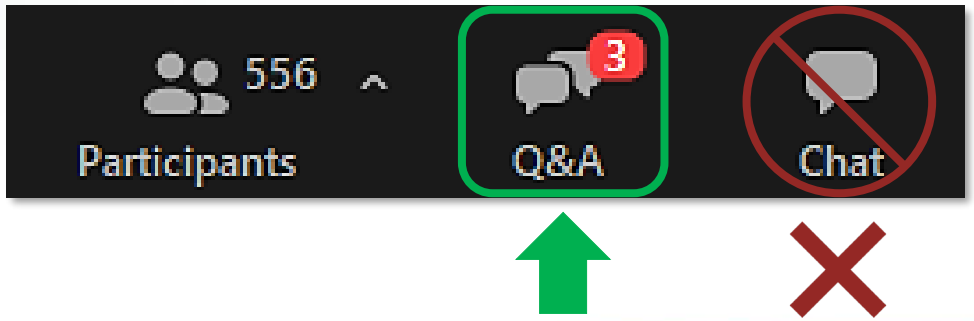
On this page, you can find:

- LOCS Call information
- Transcripts
- Slides
- Audio Recordings

https://www.cdc.gov/locs/calls

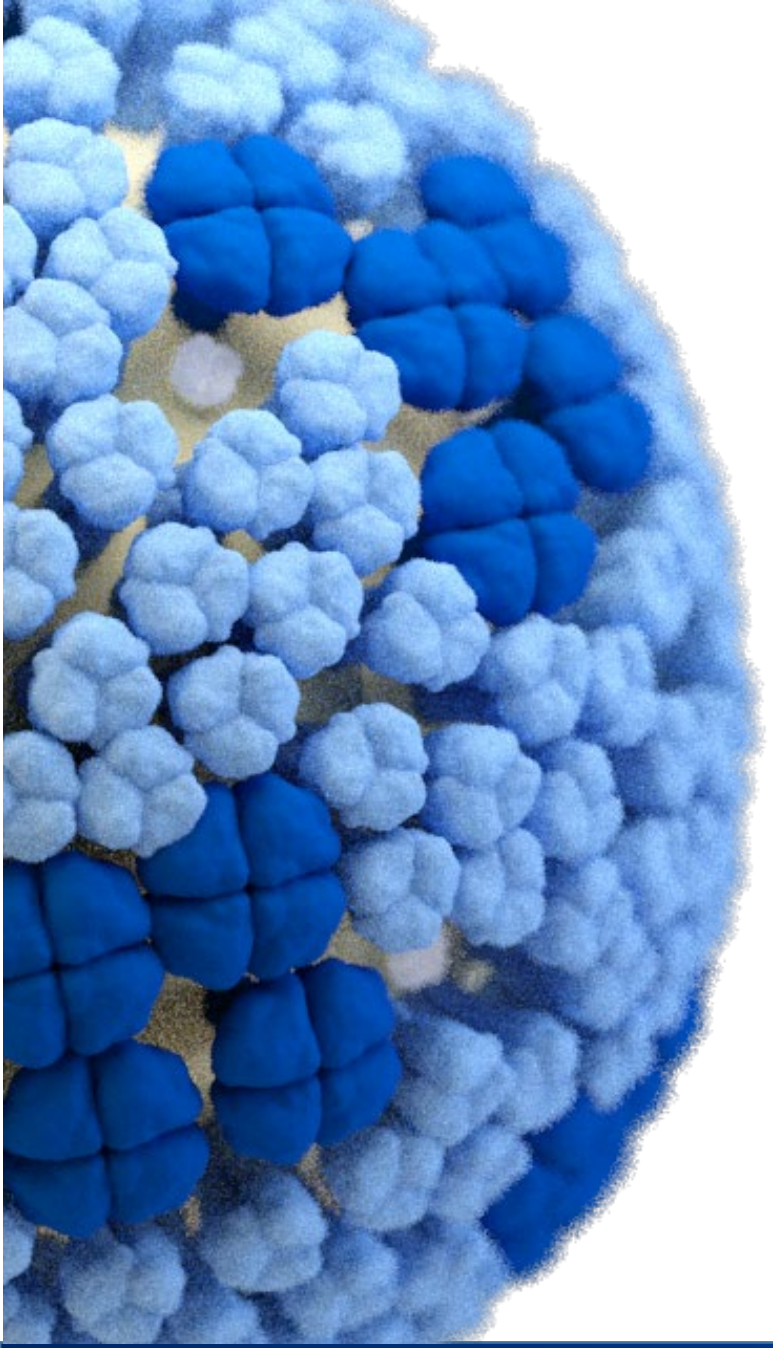
How to Ask a Question

- **Using the Zoom Webinar System**
  - Click the **Q&A button** in the Zoom webinar system
  - Type your question in the **Q&A box** and submit it
  - Please do not submit a question using the chat button



- For media questions, please contact CDC Media Relations at media@cdc.gov
- If you are a patient, please direct any questions to your healthcare provider

Slide decks may contain presentation material from panelists who are not affiliated with CDC. Presentation content from external panelists may not necessarily reflect CDC's official position on the topic(s) covered.



Situation Report and Testing Guidance for the Influenza A/H5 Outbreak

John R. Barnes PhD
Acting Deputy Branch Chief for Science
Virology Surveillance and Diagnosis Branch
Influenza Division, CDC

Situation Report

- The week of March 25th USDA confirmed detections of HPAI in dairy cows
  - As of this morning (4/15)- 26 farms in 8 states (TX 11, NM 6, KN 3, MI 2, OH 1, ID 1, NC 1, SD 1)
- Genetic sequencing of the viruses found **in infected cattle**, indicated clade 2.3.4.4b, which is the same clade that has been circulating widely in wild birds:
  - No known markers of resistance to approved antiviral drugs
  - Existing H5 candidate vaccine viruses are expected to provide good protection against the H5N1 viruses detected in cattle
  - No impact to current CDC influenza diagnostic assays at U.S. and global public health laboratories' ability to detect H5N1 viruses

Sit Rep -continued

- On April 1st, the State of Texas announced that a person has tested positive for highly pathogenic avian influenza A(H5N1) virus. This infection occurred in a person who had direct exposure to cattle presumed to be infected with highly pathogenic avian influenza.
  - The patient reported eye redness as their only symptom, consistent with conjunctivitis
- Respiratory and conjunctival specimens were tested at the Texas Tech University Bioterrorism Response Laboratory. RT-PCR results indicated that both specimens were presumptive positive for influenza A(H5) virus.
  - The specimens were sent to the CDC for further testing. They were received and tested at CDC and confirmed as highly pathogenic avian influenza A(H5N1) using diagnostic RT-PCR and sequencing.
- CDC has conducted genetic sequencing of the virus from **the patient in Texas**
- Importantly, in the virus sequences from the patient's specimen:
  - There are **no known markers** for influenza **antiviral resistance**
  - The virus is **very closely related to two existing H5N1 candidate vaccine viruses**, which could be used to make vaccine, if needed.
- Sequencing results identified **clade 2.3.4.4b** as well.
  - Sequencing of the virus from the patient specimen **identified minor changes** when compared to the viral sequences from cattle;
- Of note, the sequence was successfully generated **only from the patient's conjunctival specimen**.
  - This is consistent with the patient reporting only conjunctivitis, with no respiratory or other symptoms, and is **suggestive of a lack of respiratory infection in the patient**.

CDC's Role in response to this case

- CDC is supporting confirmatory testing for presumptive positive H5 specimens and is conducting the in-depth sequencing analysis that informs risk assessments and monitors for genetic changes in the virus.
- CDC has issued updated **guidance documents:**
  - CDC posted updated, interim recommendations for prevention, monitoring, and public health investigations on our website to include exposures to mammals infected with H5N1 viruses.
  - We have updated **recommendations for those who come into contact with Poultry and Livestock, including farmers and farm workers.**
  - We also have **guidance for clinicians** on monitoring, testing, and antiviral treatment of patients with avian influenza virus infections, and use of antivirals in exposed persons.
- On **Friday April 5th, CDC published a Health Alert Network (HAN) Health Advisory** to inform clinicians, state health departments, and the public of updated information on the human case, and emphasize key information in CDC's updated interim guidance.
- All of CDC's current avian influenza A(H5N1) virus materials are available in Spanish and English, and we are working closely with public health partners to determine and address if other language or access barriers exist.

Risk to Public

- CDC continues to assess that the risk to human health for the general public remains low.
- However, people with close or prolonged, unprotected exposures to infected birds or other animals (including livestock), or to environments contaminated by infected birds or other animals, are at greater risk of infection.

Guidance for use of CDC Influenza IVD Kits

A/B Typing Kit
Targets: INFA (M), INFB (NS), RP

Flu SC2 Multiplex
Targets: INFA (M), INFB (NS), SC2(N), RP

→ **1st line Influenza virus or SARS-2 diagnosis**

A-Subtyping Kit
Targets: INFA (M), pdmINFA (NP), pdmH1 (HA), H3 (HA) ,RP

B-lineage typing Kit
Targets: INFB (NS), BYam (HA), BVic (HA), RP

→ **Determines if typical human epidemic/endemic ("seasonal") influenza virus**

A/H5 Subtyping Kit
Targets: INFA (M), H5a(HA), H5b (HA), RP

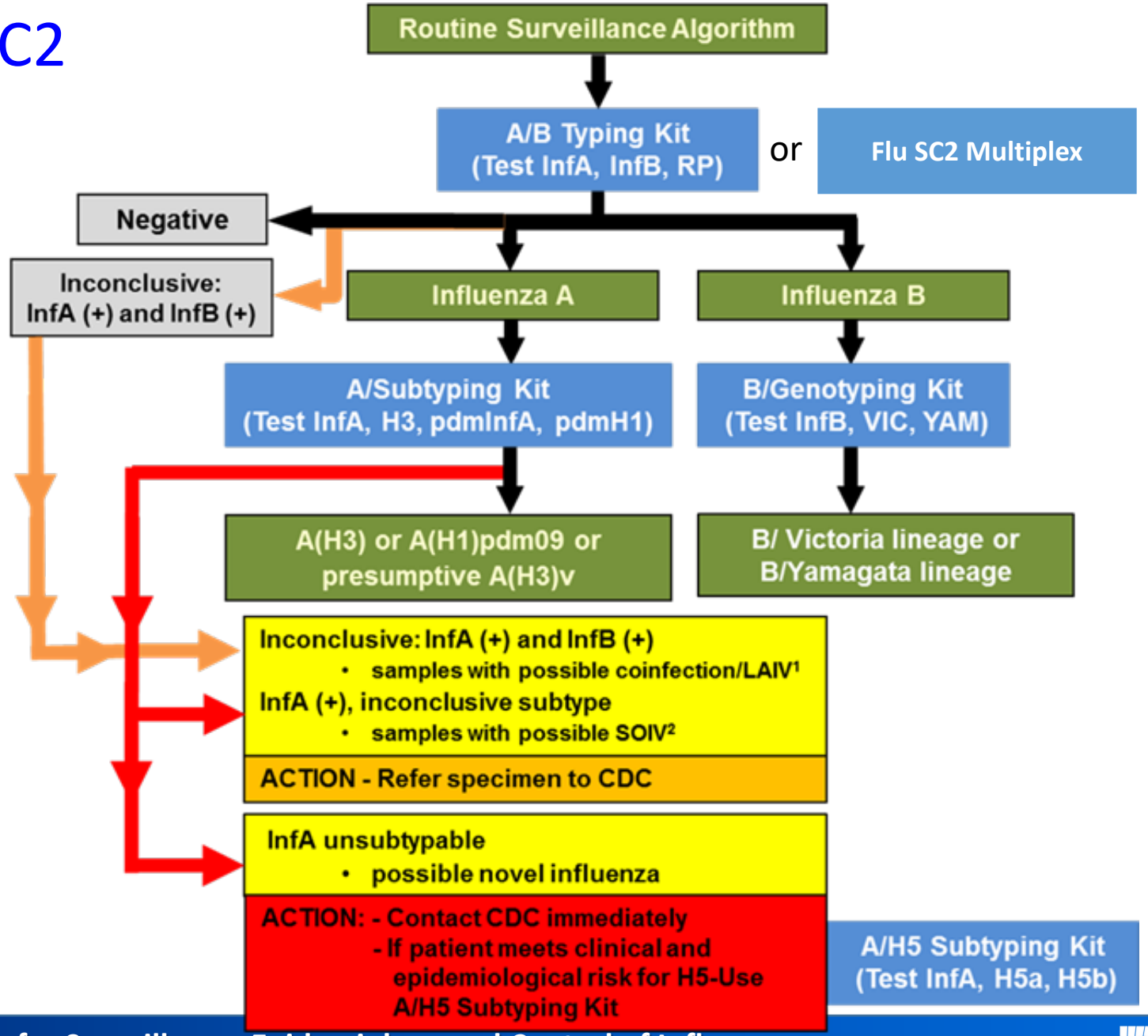
→ **Determines if it is H5 avian influenza virus**

Should not be performed unless the patient meets clinical and epidemiologic criteria for testing suspect specimens (see Case Definitions for Investigations of Human Infection with Avian Influenza A Viruses in the United States (cdc.gov).

If the test result is presumptive positive, per our FDA approved IFU, the sample can be sent to CDC as a diagnostic specimen for additional testing and confirmation.

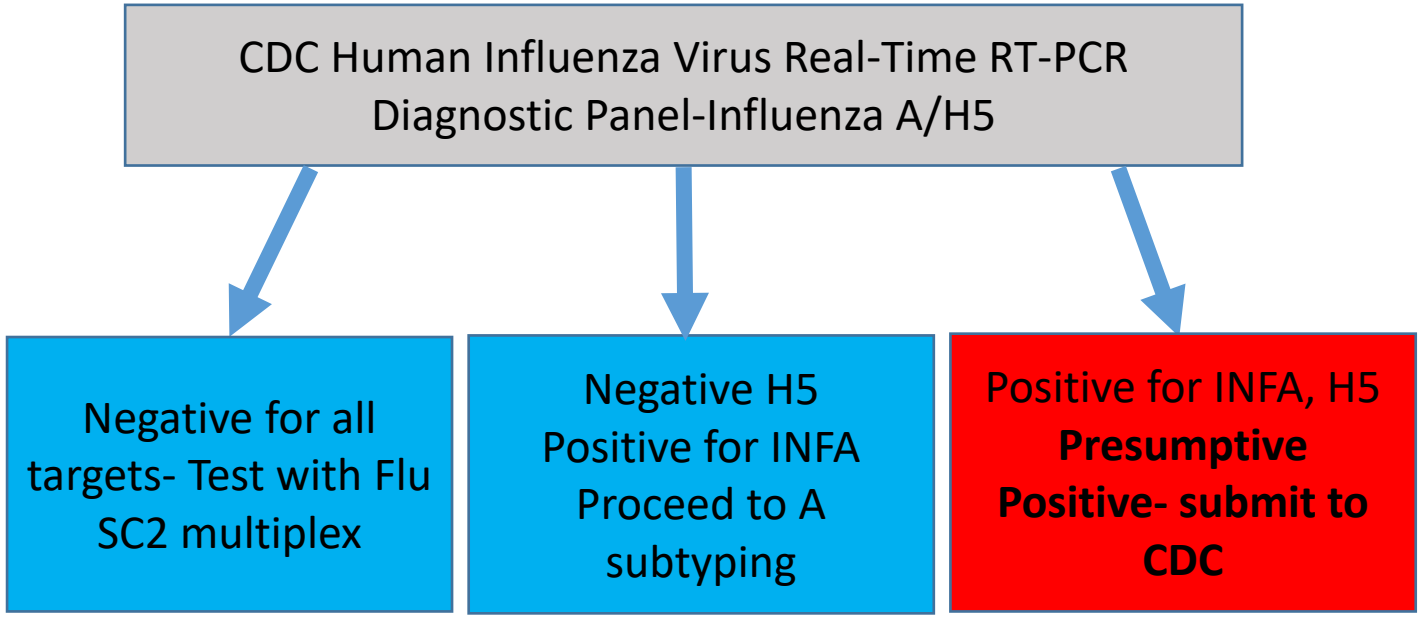
Dx Algorithm with the Flu-SC2 multiplex assay

- The Flu SC2Multiplex can be used interchangeably with the A/ B typing kit.
- ***Note: H5 test should only be administered to those specimens that are A positive, unsubtypable or from patients with known exposure to H5 infected animals/ people***



Testing for People Exposed to Animals with Confirmed H5

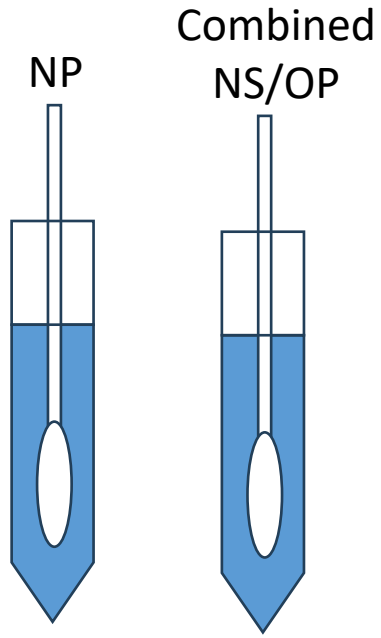
- CDC guidance:
  - Information for People Exposed to Birds Infected with Avian Influenza Viruses | Avian Influenza (Flu) (cdc.gov)
  - Samples from symptomatic people exposed to infected animals with confirmed H5 can be tested **DIRECTLY** with the CDC A/H5 Kit
  - **Option –Test A/B typing, A subtyping, A/H5 simultaneously- Testing with CDC influenza panel does not have to be sequential**



Specimen collection H5

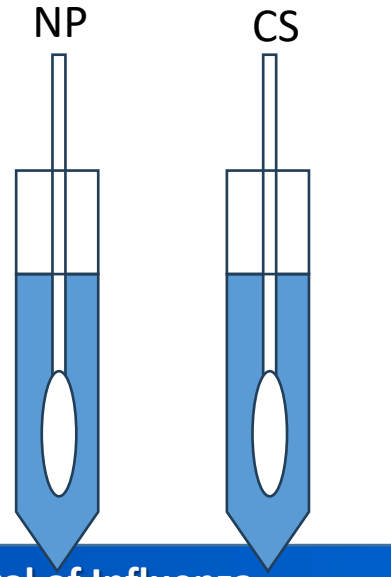
Respiratory

- For testing of individuals that meet clinical and epidemiologic criteria for influenza A(H5N1) with respiratory illness, preferably two specimens should be collected a 1. a nasopharyngeal (NP) swab and 2. a combined nasal swab oropharyngeal swab (e.g., two swabs combined into one viral transport media vial) and minimally a single NP swab should be collected



Conjunctivitis

- Individuals that meet clinical and epidemiologic criteria for influenza A(H5N1) with conjunctivitis (with or without respiratory symptoms) should have two swabs collected as well: 1. a conjunctival swab and 2. an NP swab.



H5 Guidance continued

A/H5: Specimens with presumptive positive or inconclusive results

- A specimen is only presumptively positive for influenza A/H5 if both targets (InfA, H5) are positive.
- A result is inconclusive for A/H5 if the test is positive for A/H5 and is negative for INFA.
- **Please submit any sample with an H5 positive marker IMMEDIATELY to CDC for further evaluation**
- Reminder, please refer to any H5 positive in correspondence as "presumptive" until it is confirmed at CDC

Specimen Notification and Shipping to CDC

***Respiratory Specimens that are Influenza A positive, but have inconclusive results using Influenza A Subtyping or Influenza B Lineage Kits**

Notify CDC **IMMEDIATELY** (flusupport@cdc.gov) and send the following clinical specimens to CDC **IMMEDIATELY** for diagnostic testing and/or further characterization:

- Influenza A positive (InfA Ct value <35), negative for H1pdm or H3 (“unsubtypable”)
- Presumptive positive for other subtypes (e.g., H5)
- Inconclusive indicating an atypical/novel influenza A virus

CDC Contact
John Barnes, Ph.D.
Team Lead, Genomics and Diagnostics Team
VSDB/ID
Phone: 404-639-2434
Fax: 404-639-2350
Email: flusupport@cdc.gov
Email: fzq9@cdc.gov

Diagnostic Specimen Submission

Complete two forms:

1) **Influenza Specimen Submission Form** and indicate the following specific information**:**

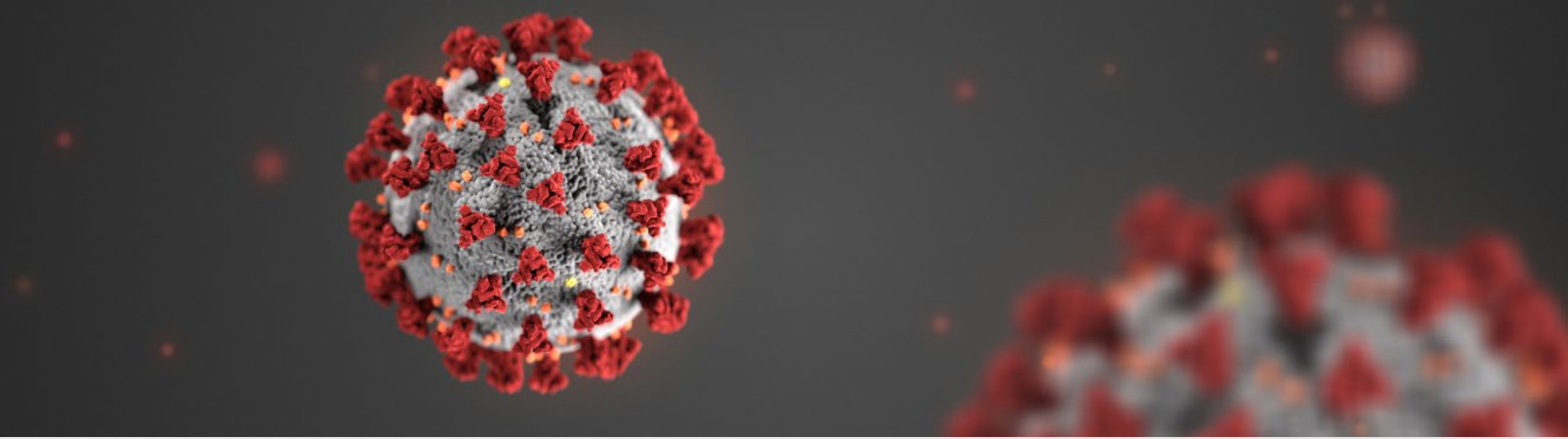
- **Reason for Submission:** Diagnosis
- **If Clinical Specimen**: Indicate specimen type
- **Type/Subtype:** Inconclusive
- **Comments:** Provide any relevant rRT-PCR data

2) CDC Specimen Submission Form, CDC 50.34, or CSTOR which is required for all diagnostic submissions when results can be reported back to a patient or healthcare provider.

Note: Send completed form(s) and tracking information electronically to flusupport@cdc.gov. Include hard copies of both forms in the shipment.

Ship to:

John Barnes, Ph.D.
Centers for Disease Control and Prevention
Influenza Division, H23-6 (Unit 198)
c/o STAT
1600 Clifton Rd, NE
Atlanta, GA 30329



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

Update on Testing for Measles

Stephen Crooke and Paul Rota
Viral Vaccine Preventable Diseases Branch, DVD, NCIRD, CDC

The Laboratory Outreach Communication System (LOCS) , April 15, 2024

Disclaimer: The conclusions in this report are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

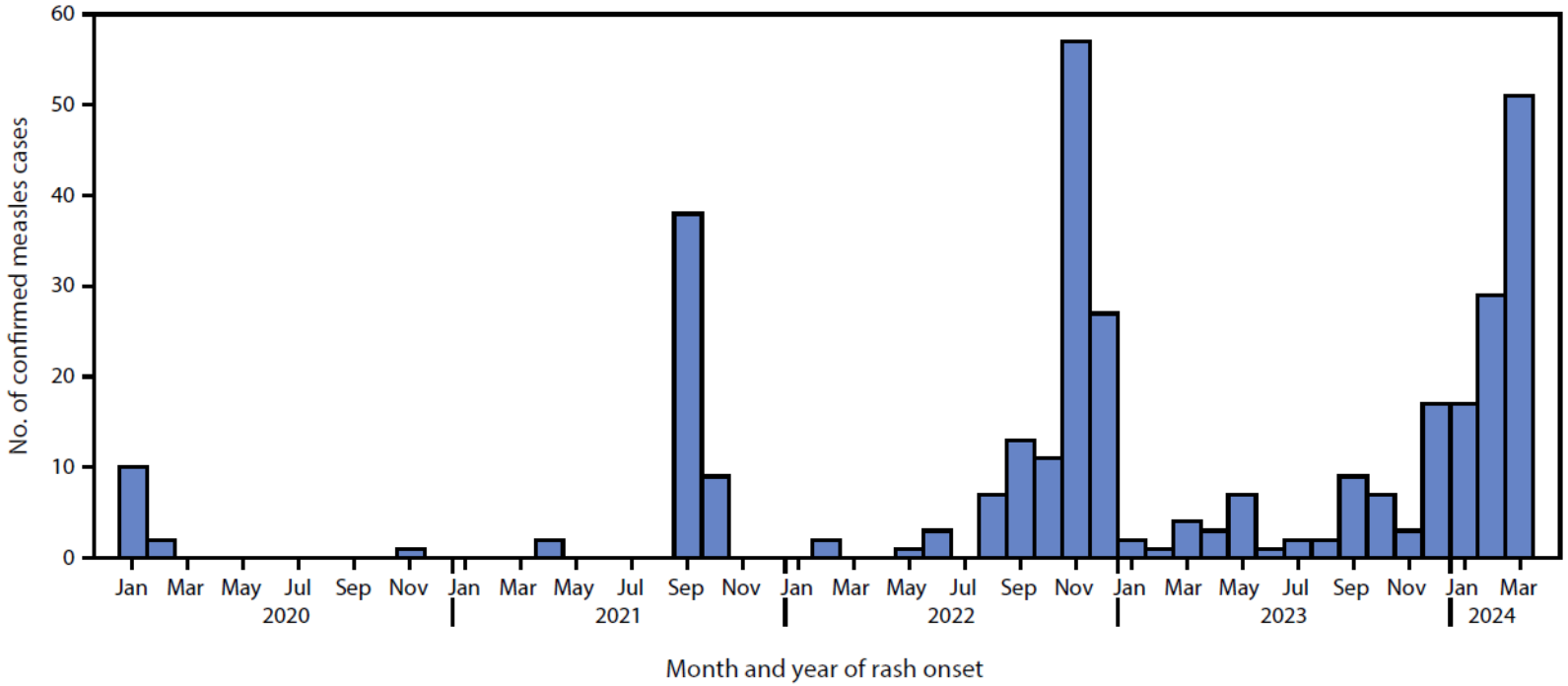
Data from January 1, 2020, to March 31, 2024

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 73 / No. 14
April 11, 2024

Measles — United States, January 1, 2020–March 28, 2024

Adria D. Mathis, MSPH[1]; Kelley Raines, MPH[1]; Nina B. Masters, PhD[1]; Thomas D. Filardo, MD[1]; Gimin Kim, MS[1]; Stephen N. Crooke, PhD[1]; Bettina Bankamp, PhD[1]; Paul A. Rota, PhD[1]; David E. Sugerman, MD[1]

FIGURE. Confirmed measles cases, by month of rash onset (N = 338) — United States, January 1, 2020–March 28, 2024



Data from cdc.gov/measles/cases and outbreaks as of April 11, 2024

U.S. Cases in 2024

Total cases

121

Age

Under 5 years: **57 (47%)**

5-19 years: **27 (22%)**

20+ years: **37 (31%)**

Vaccination Status

Unvaccinated or Unknown: **82%**

One MMR dose: **13%**

Two MMR doses: **5%**

U.S. Hospitalizations in 2024

56%

of cases hospitalized (68 of 121 cases) for isolation or for management of measles complications.

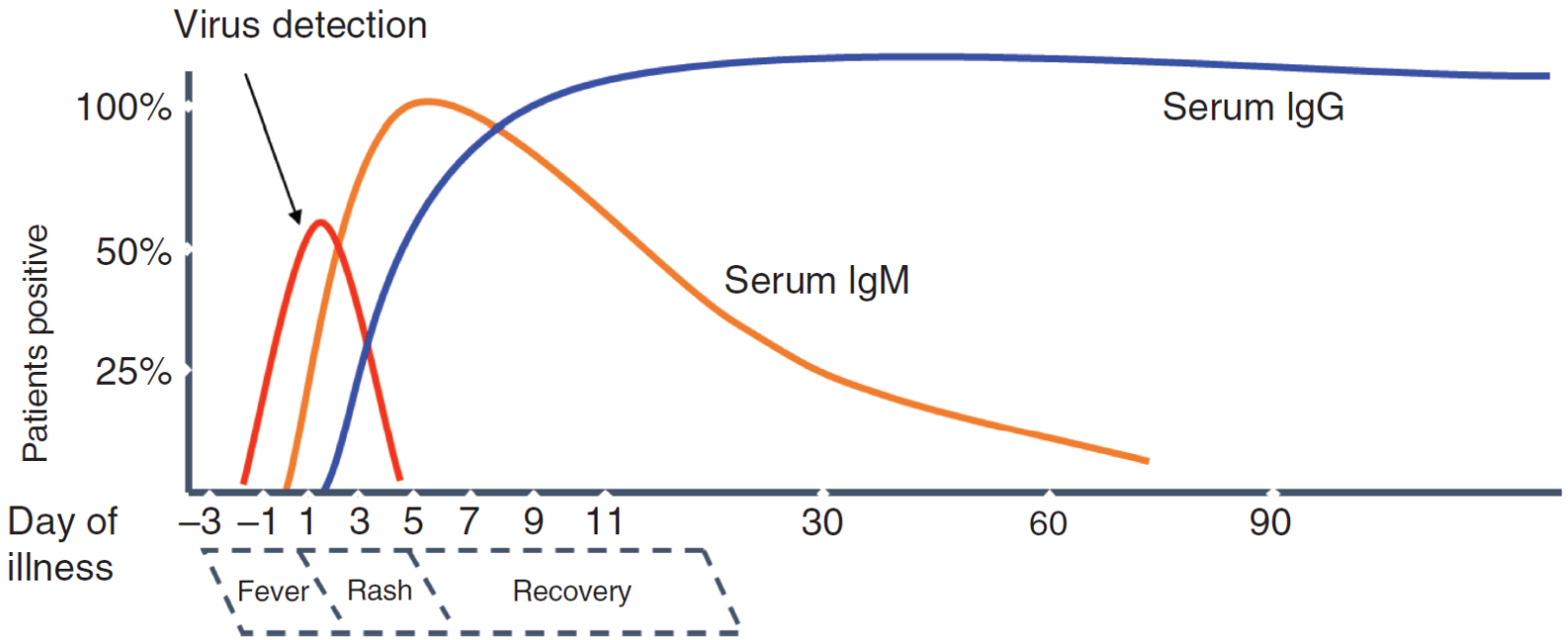
Percent of Age Group Hospitalized

Under 5 years: **65%** (37 of 57)

5-19 years: **37%** (10 of 27)

20+ years: **57%** (21 of 37)

Measles IgM/IgG/Viral Detection by Day of Illness



Molecular Tests for Measles

- RT-PCR to detect viral RNA (throat swabs, NP/OP, urine)
  - CDC, Association of Public Health Laboratories Vaccine Preventable Disease Reference Centers (APHL-VPD RCs, https://www.aphl.org/programs/infectious_disease/Pages/VPD.aspx), many state PHLs (CDC assay)
  - Commercial laboratories

- MeVa, RT-PCR that specifically detects measles vaccine strains
  - Laboratory confirmation of vaccine reactions
  - CDC, APHL-VPD-RCs, other states onboarding

- Measles genotyping
  - Sanger sequence of N-450 is standard WHO protocol
  - CDC, APHL-VPD-RCs, some state PHLs
  - Data reported to WHO database, MeaNS
  - CDC, VPD-RCs, many state PHLs performing whole genome sequencing (WGS)
  - WGS provides increased resolution for tracking transmission pathways

Serologic Tests for Measles

- ELISA to detect measles-specific IgM (serum)
  - Many state PHLs, commercial laboratories
  - CDC (capture assay – high sensitivity/specificity)

- ELISA to detect measles-specific IgG (serum)
  - Many state PHLs and CDC
  - Commercial laboratories
    - Often conducted in conjunction with IgM testing at commercial laboratories
  - Not used for case confirmation, can be useful in case classification
    - Use of IgG for case confirmation requires testing acute and convalescent phase serum samples

- Measles-specific IgG avidity (serum)
  - CDC (lab-developed test)
  - Specialized testing used primarily for case classification of confirmed measles cases

Considerations for IgM Testing

- **Advantages:**
  - Readily available at many laboratories, can be (semi) automated
  - Relatively quick turnaround time
  - Longer specimen collection window after rash onset
    - IgM is most sensitive 3+ days after rash onset; can be detected for 6–8 weeks after acute measles; CDC website: https://www.cdc.gov/measles/lab-tools/serology.html

- **Disadvantages:**
  - Low positive predictive value (PPV) in low incidence settings
    - Risk of false positives
    - Cases should meet clinical case definition
    - Risk of false negative if sample is taken <3 days after rash onset
  - Cross-reactivity with other febrile rash illnesses
    - Parvovirus-B19, HHV-6, etc.

Advantages of Viral VPD Testing in Commercial/Clinical Laboratories (RT-PCR, PCR, IgM)

- Expanded availability of testing
- Potentially faster turn-around times
- Providers are familiar with commercial labs, “normal” specimen flow
- Link to provider Electronic Medical Record Systems

Challenges for Viral VPDs Testing in Commercial/Clinical Laboratories (RT-PCR, PCR, and IgM)

- Challenges:
  - Unknown sensitivity and specificity of RT-PCR
  - Lack of detail about performance of IgM assays formats
  - Ability to detect all circulating viral genotypes is unknown
  - Integration with state/county DPH, state PHL for interpretation of results
  - Acceptable specimen types varies among laboratories (e.g. transport medium, source) and may not permit addition testing
  - Positive specimens not routinely genotyped
  - Specimens unavailable for additional testing
  - Measles vaccine-specific RT-PCR assays (MeVa) not available; loss in response time and risk for vaccine reactions to be considered as measles cases
  - Specimen storage, unknown specimen stability

Considerations for Providers and State Health Departments for Testing in Commercial/Clinical Laboratories

- Turnaround time and reporting are critical
- Availability of serum samples for follow up testing including IgM capture assays and IgG avidity by CDC
- Reflex testing for measles negative samples (e.g. rubella) if needed
- Routine genotyping for RT-PCR positive specimens by VPD-RCS or CDC
  - Sequence data are needed to maintain an accurate sequence database
  - Data needed to track transmission and verify continued elimination of measles
- Collect, ship, and store samples in a manner that is consistent with CDC Test Directory

Next Scheduled Call

Monday, May 20
3 PM - 4 PM EDT

https://www.cdc.gov/locs/calls

CDC Social Media

https://www.facebook.com/CDC

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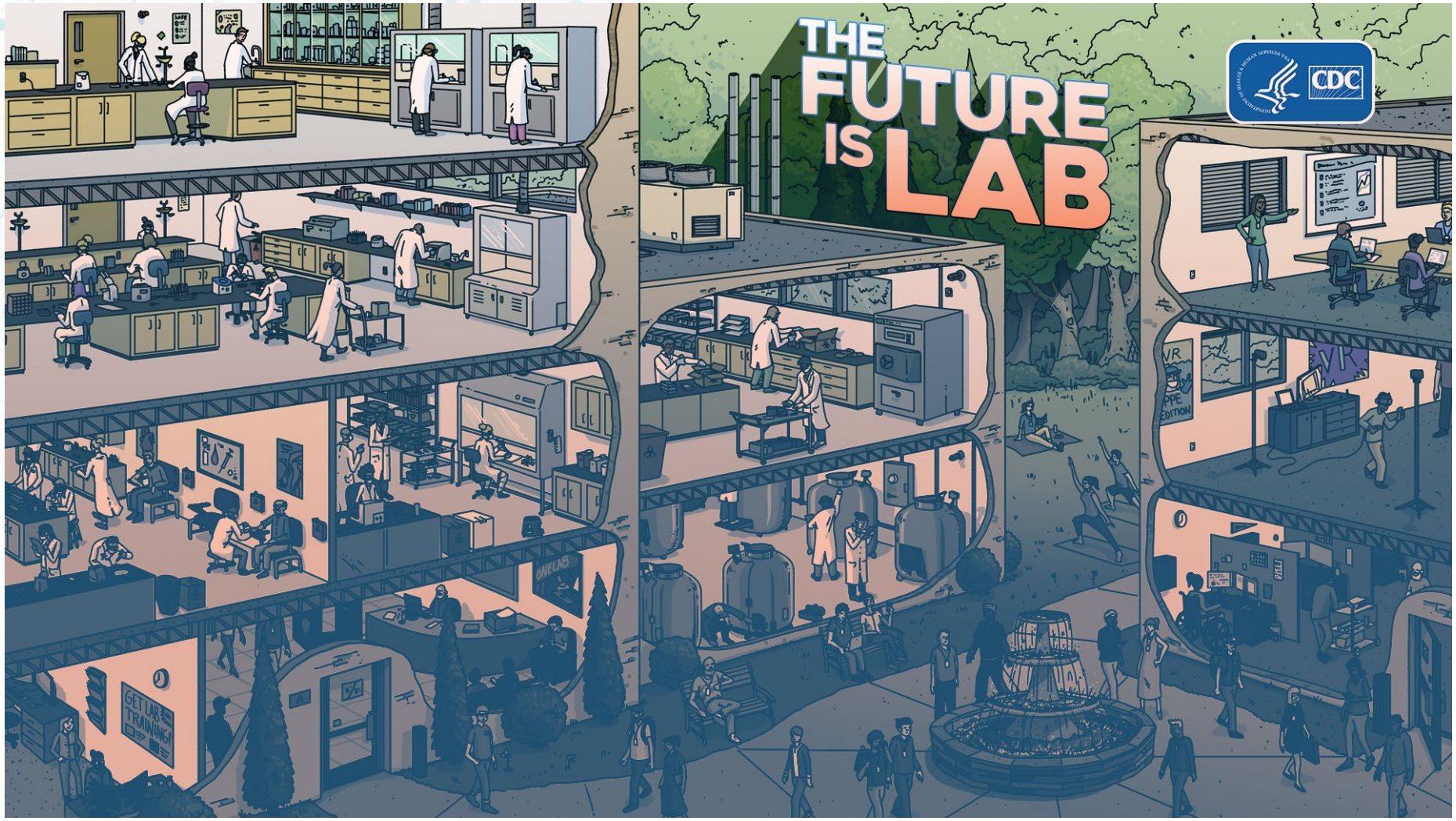
https://www.linkedin.com/company/cdc

Thank You For Your Time!



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