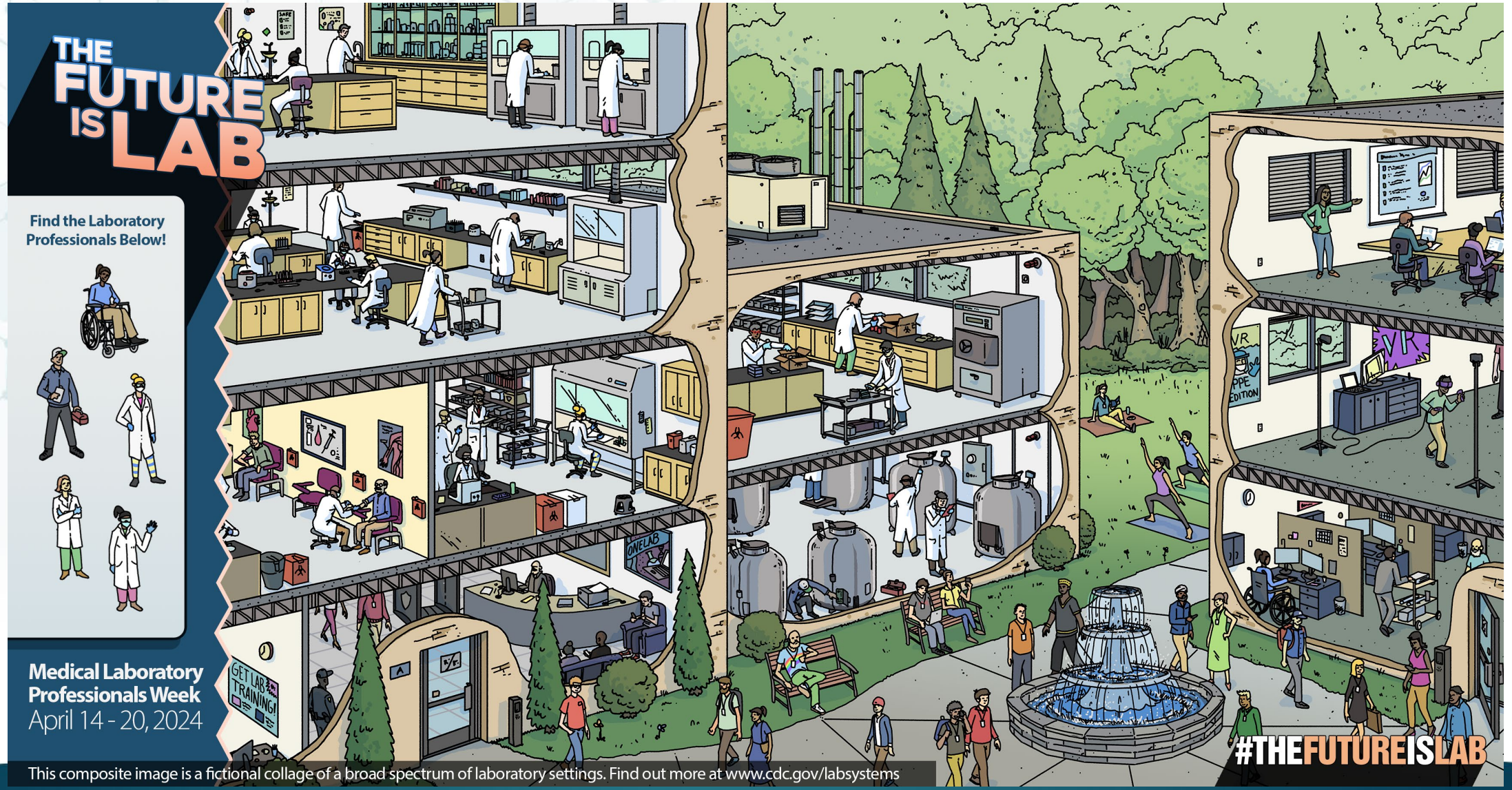
Thank you for joining, we'll begin the call momentarily.



Laboratory Outreach Communication System (LOCS) Call

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

- **Welcome**
  - Sean Courtney, CDC Division of Laboratory Systems
- **Situational Update and Response to the Highly Pathogenic Avian Influenza A(H5N1) Outbreak in U.S. Dairy Cattle**
  - Todd Davis, CDC Influenza Division
- **CDC Efforts to Expand Testing Capacity and Enhance Surveillance**
  - Sean Courtney, CDC Division of Laboratory Systems
- **BD Update**
  - Chris Beddard, BD Life Sciences
- **CDC Culture Quality Tools**
  - Jake D. Bunn, CDC Division of Laboratory Systems
- **Blood Culture Utilization**
  - Valeria Fabre, Johns Hopkins University

About DLS

Vision

Exemplary laboratory science and practice advance clinical care, public health, and health equity.

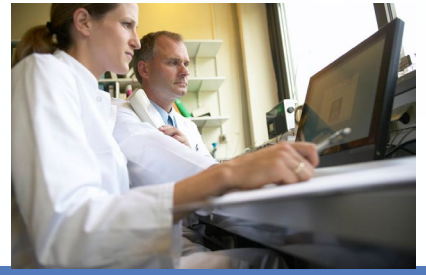
Four Goal Areas

Quality Laboratory Science

- Improve the quality and value of laboratory medicine for better health outcomes and public health surveillance

Highly Competent Laboratory Workforce

- Strengthen the laboratory workforce to support clinical and public health laboratory practice



Safe and Prepared Laboratories

- Enhance the safety and response capabilities of clinical and public health laboratories

Accessible and Usable Laboratory Data

- Increase access and use of laboratory data to support response, surveillance, and patient care

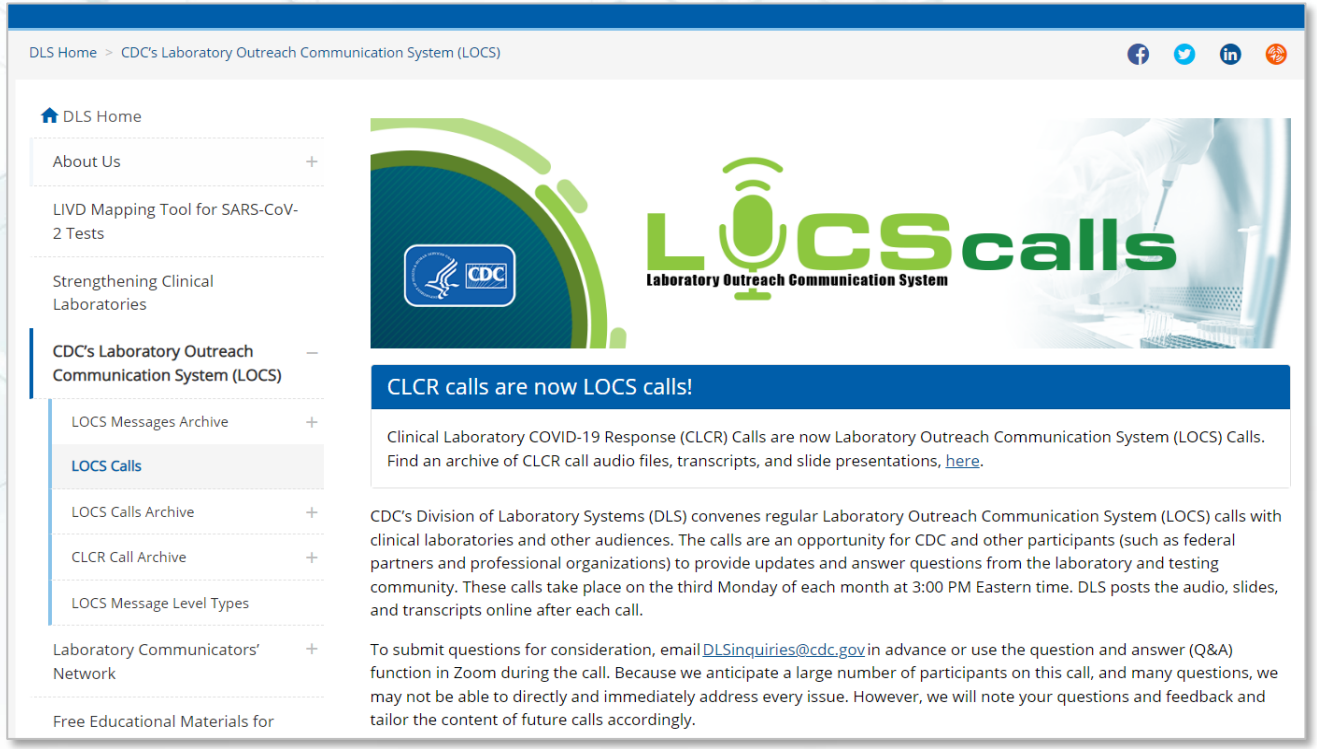
We Want to Hear From You!

Training and Workforce Development

Questions about education and training?

Contact LabTrainingNeeds@cdc.gov

LOCS Calls



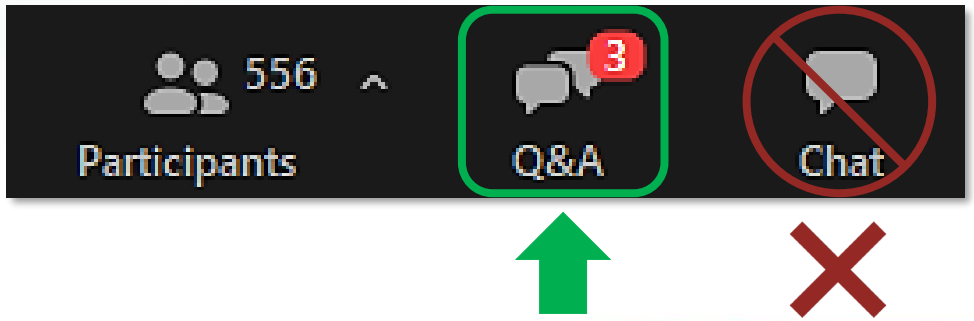
On this page, you can find:

- 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.

Situational Update and Response to the Highly Pathogenic Avian Influenza A(H5N1) Outbreak in U.S. Dairy Cattle

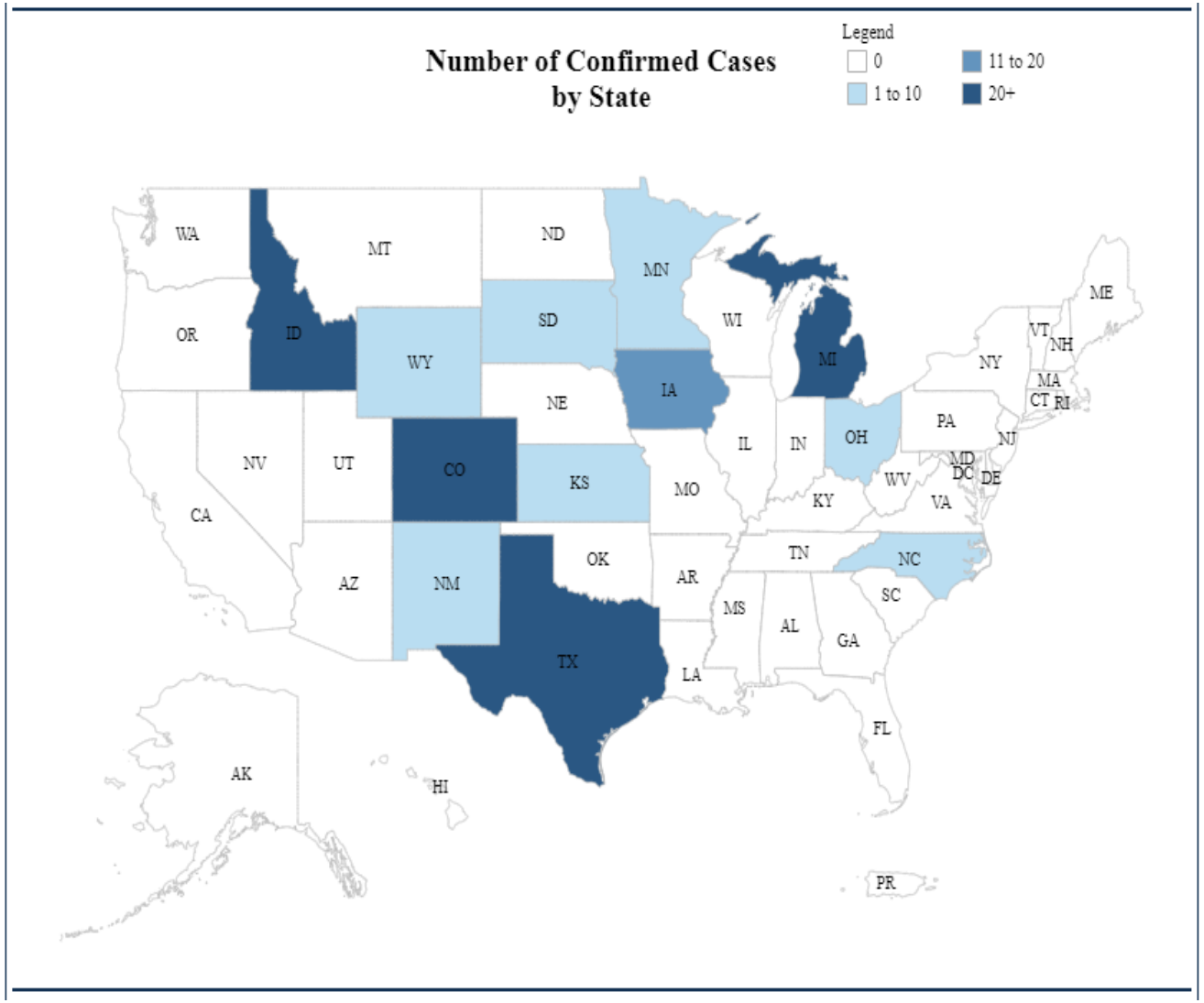
Todd Davis
Branch Chief (acting)
Virology, Surveillance and Diagnosis Branch
Influenza Division
National Center for Immunization and Respiratory Diseases
Centers for Disease Control and Prevention

CDC Influenza

Cattle Outbreak Update

- As of July 11, 2024, USDA has confirmed HPAI in dairy herds in **145** farms across 12 states:
  - **CO (30)**, **IA (13)**, ID (27), KS (4), **MI (26), MN (7),** NC (1), NM (8), OH (1), SD (5), **TX (22),** WY (1)

- Other animal species reported on dairy premises:
  - 5 wild birds (2 TX farms)
  - **14 cats** (3 MI, 3 NM, 1 OH, 2 TX, 1 CO, **2 MN** farms)
  - 2 racoons (1 NM, 1 MI)
  - 2 opossums (MI)



https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections

https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/hpai-confirmed-cases-livestock

Monitoring of Exposed Persons

Monitoring Strategies

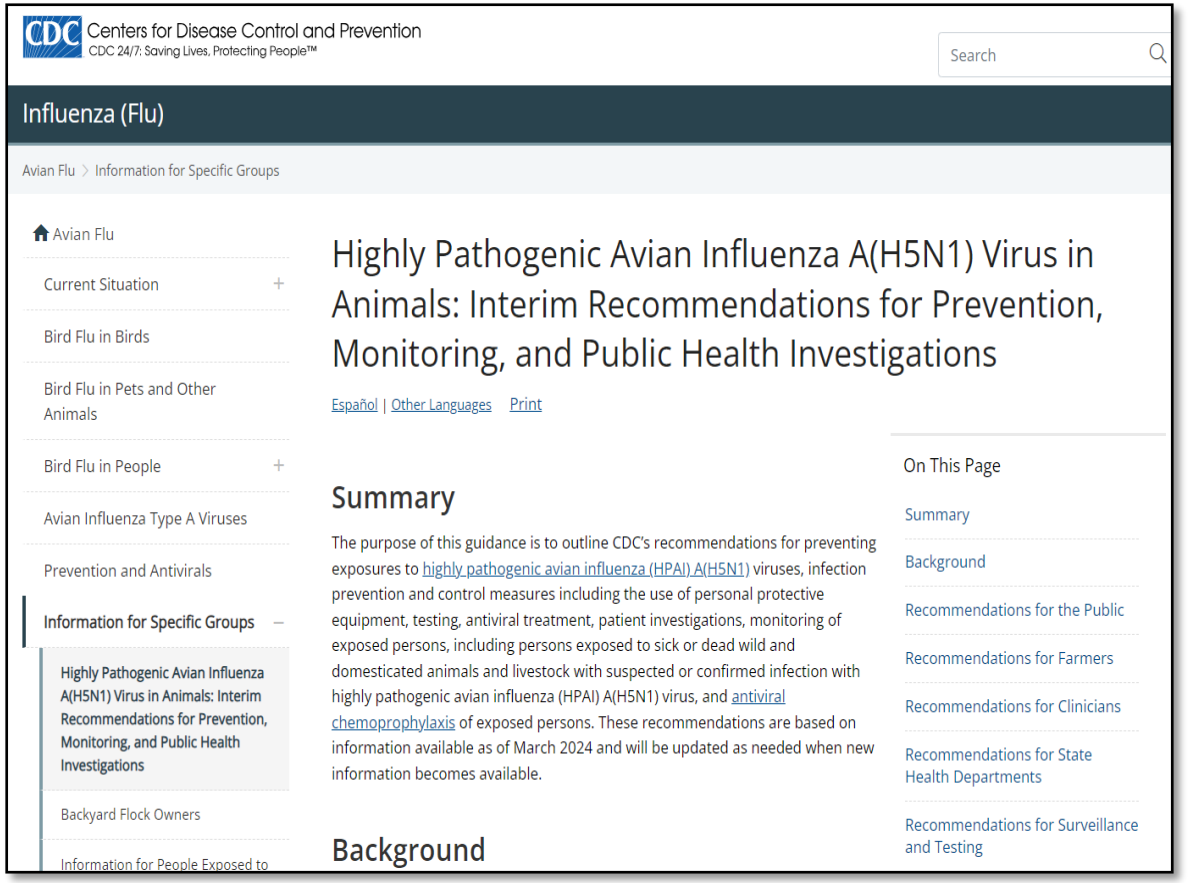
- Active outreach to states with positive cattle herds
- State public health labs perform monitoring of exposed individuals for symptoms and testing of symptomatic individuals
- Enhanced influenza surveillance
- Planned epidemiologic studies
- Since March 2024 >32,000 specimens have been tested at PHLs that would have detected A(H5) or other novel viruses.

Since Feb 2022 (bird exposure)

- CDC and state and local health departments actively monitor people exposed to infected birds, poultry or other animals for 10 days after exposure
  - At least 9,500 people monitored and
  - At least 350 people tested for novel influenza A

Current outbreak (cattle exposure)

- >1,390 people actively monitored
- Additional persons passively monitored
- States and CDC have tested >61 persons



[How CDC is monitoring influenza data to better understand the current avian influenza A (H5N1) situation in people | Avian Influenza (Flu)]

A(H5N1) Human Cases Associated with Dairy Cattle exposure

- April 1 – Texas announced 1st human infection *
- May 22 – Michigan announced 2nd human infection†
- May 30 – Michigan announced 3rd human infection †
- July 3 – Colorado announced 4th human infection#

  - Adults working at dairy farms and in contact with cows
  - 1st, 2nd and 4th cases reported conjunctivitis only, 3rd reported minor respiratory symptoms
  - All offered oseltamivir, mild illness and recovered without hospitalization
  - No human-to-human transmission

* Health Alert: First Case of Novel Influenza A (H5N1) in Texas, March 2024 | Texas DSHS

† Influenza A (H5N1) (michigan.gov)

Colorado state health officials identify a human case of avian flu

CDC Influenza

Additional A(H5) cases confirmed following exposure on poultry farm in Colorado

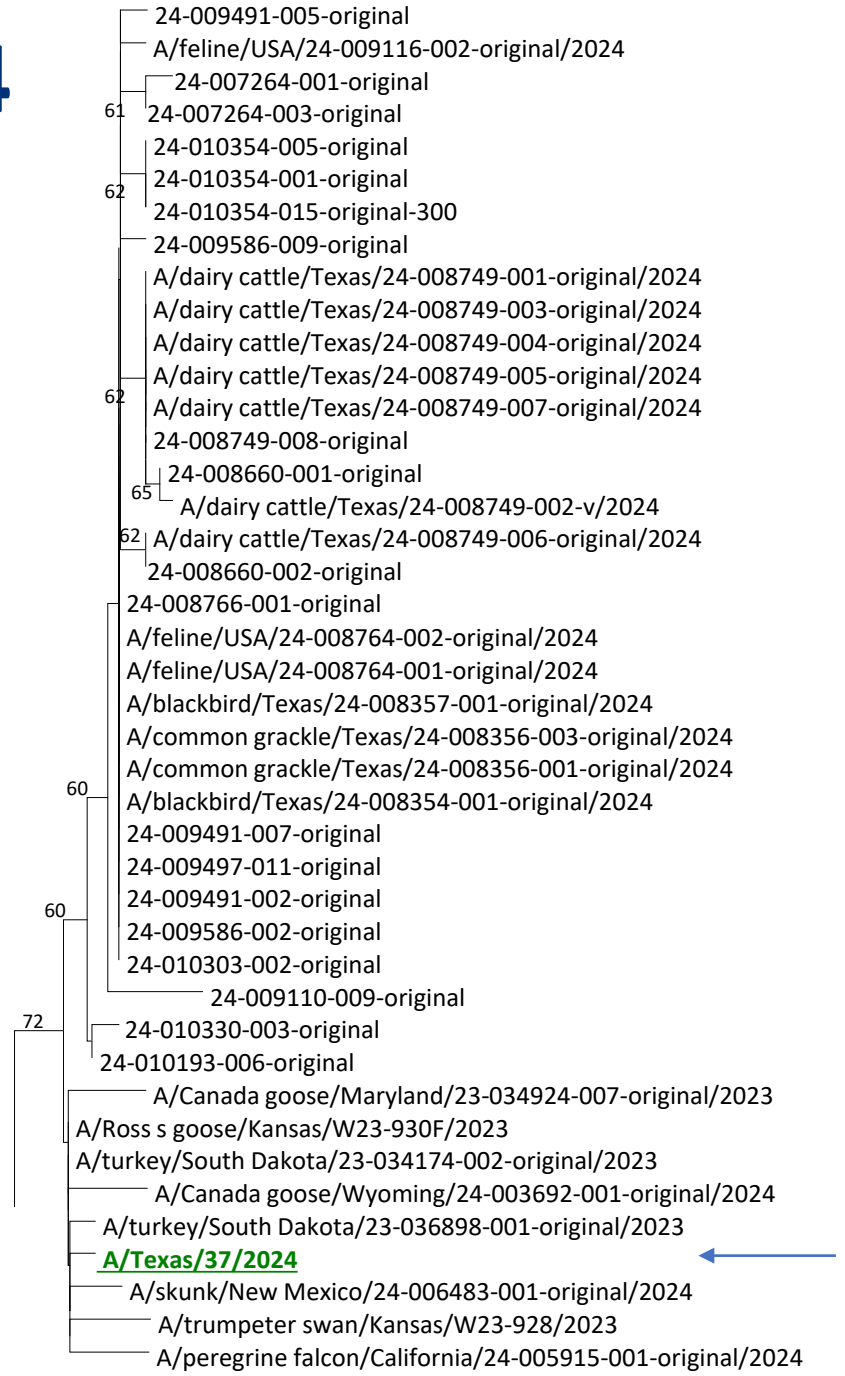
- Colorado Department of Public Health and Environment reporting a total of five human cases of avian influenza in workers responding to an avian influenza outbreak at a commercial egg layer operation on July 14th .

- CDC has confirmed four of the cases; one additional case is presumptive positive and pending confirmation at CDC.

A(H5N1) Human Case in Texas, 2024

Genetic sequencing of the viruses found **in infected cattle and human sequence**, indicate:

- B3.13 genotype:
  - PA, HA, NA and M gene segments from Eurasian wild bird lineages
  - PB2, PB1, NP and NS gene segments from American wild bird lineages.
- No known markers of resistance to approved antiviral drugs (PA, NA , M2)
- No impact of mutations to current CDC influenza diagnostic assays at U.S. and global public health laboratories' ability to detect H5N1 viruses
- Human virus sequenced (from the conjunctival sample and NP) had PB2 E627K mutation



Uyeki TM,... Davis CT. N Engl J Med. 2024 Jun 6;390(21):2028-2029.

[Technical Update: Summary Analysis of Genetic Sequences of Highly Pathogenic Avian Influenza A(H5N1) Viruses in Texas (cdc.gov)]

CDC Influenza

1st human case of A(H5N1) from Michigan

- No amino acid changes were identified in the HA gene sequence from the Michigan patient specimen compared to the HA sequence from the case in Texas

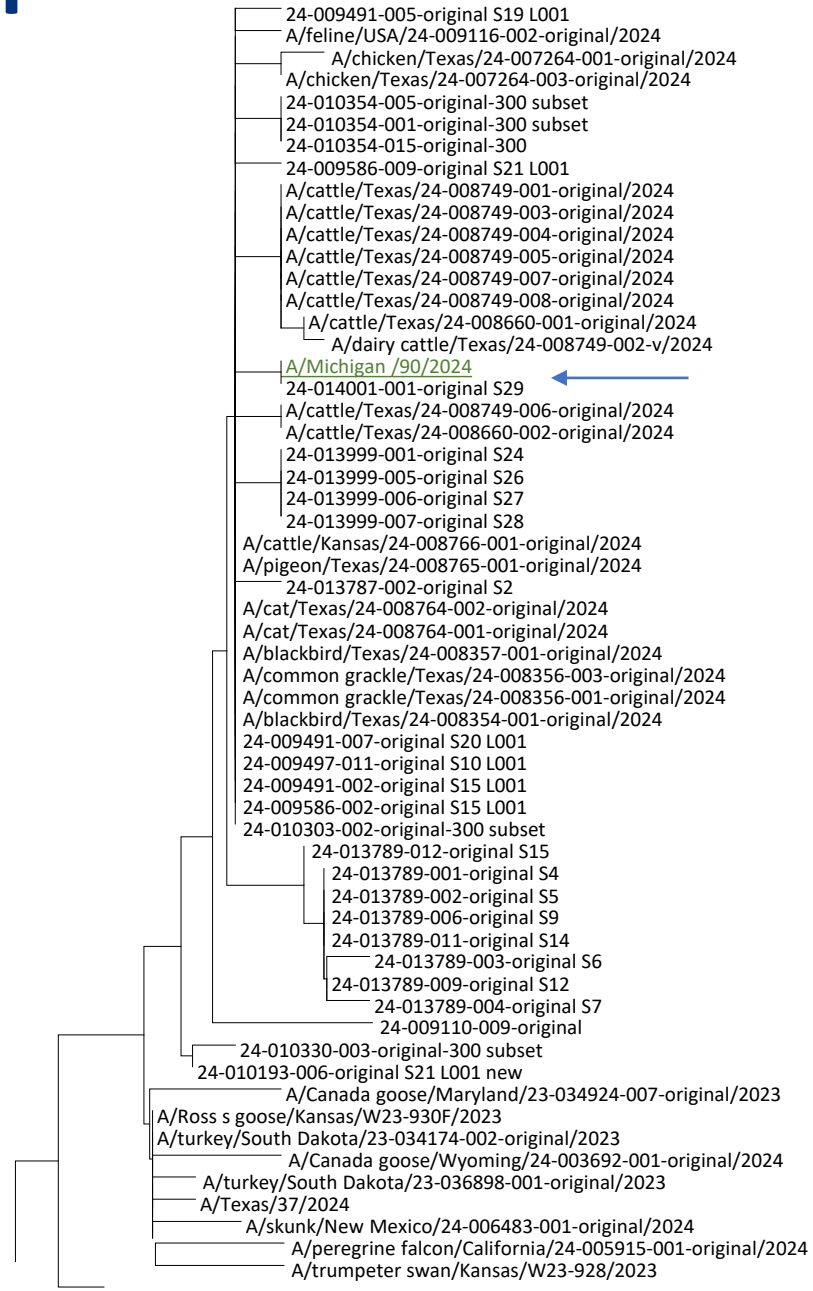
- The genome of the human virus from Michigan **did not** have the PB2 E627K change detected in the virus from the Texas case
  - Notable change (PB2 M631L) compared to the Texas case that is known to be associated with viral adaptation to mammalian hosts
  - Detected in 99% of dairy cow sequences but only sporadically in birds

- Genome of A/Michigan/90/2024 was closely related to sequences detected in infected dairy cows

- Virus isolation successful.

- No markers known to be associated with influenza antiviral resistance found

- Virus is closely related to two existing HPAI A(H5N1) candidate vaccine viruses that are already available to manufacturers, and which could be used to make vaccine if needed.



CDC Influenza

[Technical Update: Summary Analysis of the Genetic Sequence of a Highly Pathogenic Avian Influenza A(H5N1) Virus Identified in a Human in Michigan | Avian Influenza (Flu) (cdc.gov)]

2nd human case of A(H5N1) from Michigan

- **Partial HA and full-length NA of the viral RNA from the 2nd case from Michigan**
- **Virus isolation unsuccessful**
- No changes in the receptor binding domain that would impact infectivity or transmissibility between humans (i.e., no changes associated with receptor binding specificity; virus remains fully avian).
  - No HA changes identified in antigenic sites that would impact CVV cross-protection.
  - NA sequence confirms no changes associated with reduced antiviral susceptibility.

A(H5N1) case detected in Colorado

- **Genetic sequencing was not possible due to low viral load in sample**
- **Virus isolation unsuccessful**

CDC Influenza

Technical Update: Summary Analysis of the Genetic Sequence of a Highly Pathogenic Avian Influenza A(H5N1) Virus Identified in a Human in Michigan | Avian Influenza (Flu) (cdc.gov)

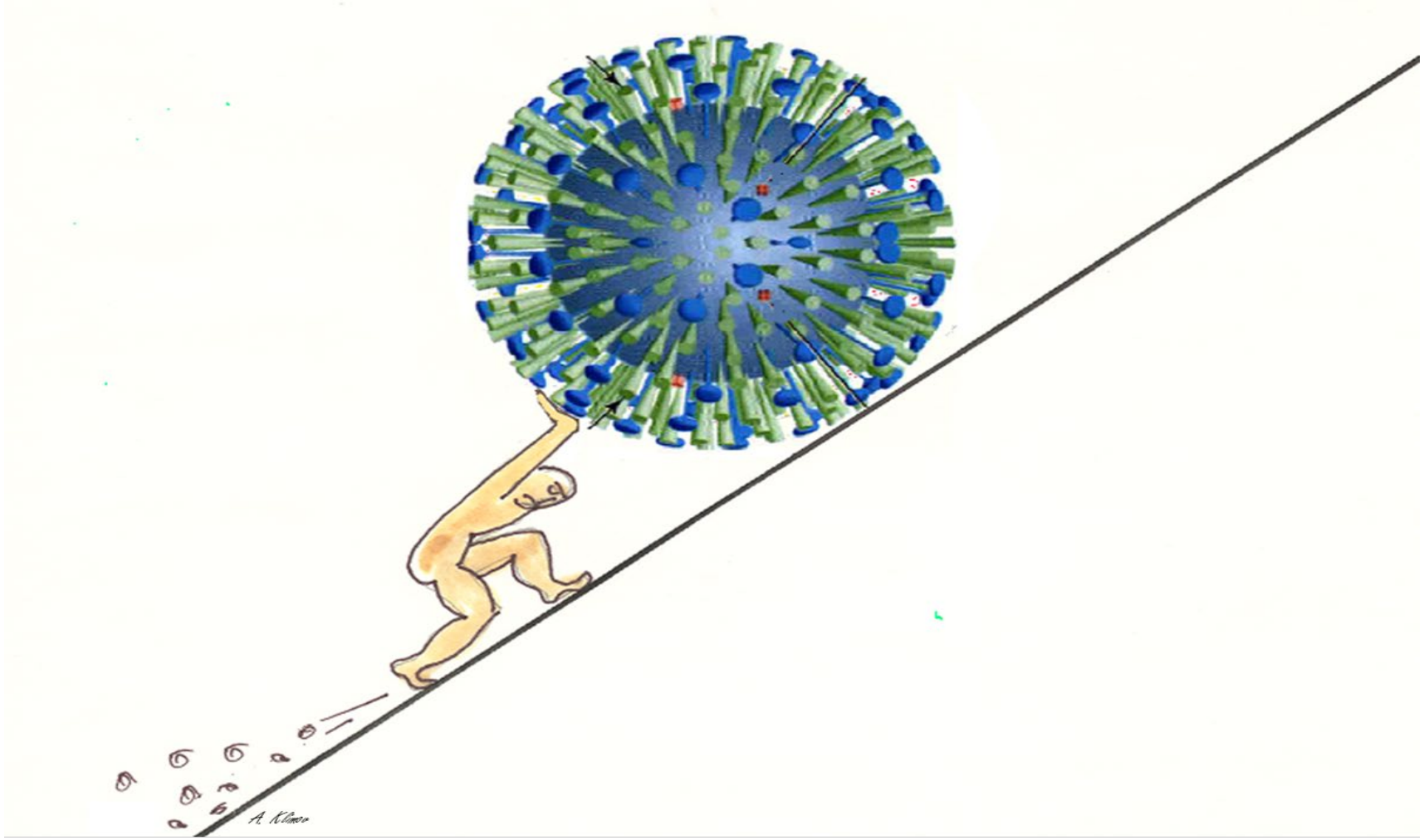
Diagnostic testing

- **FDA granted enforcement discretion for the use of conjunctival swabs with the CDC Human Influenza Virus Real-Time RT-PCR Diagnostic Panel, Influenza A/H5 Subtyping Kit**
  - 05/31/2024: Lab Advisory: Enforcement Discretion Granted for the Use of Conjunctival Swabs with the CDC Human Influenza Virus Real-Time RT-PCR Diagnostic Panel, Influenza A/H5 Subtyping Kit
  - Extended to November 1st

- **Completed recommendations/protocol for conjunctival sample collection methods for healthcare providers**
  - Produced a Desk Reference Graphic (i.e., Job-Aid) describing the procedure for collecting and transporting conjunctival specimens for H5N1 testing in a patient with conjunctivitis and suspected H5N1 infection.
  - Conjunctival Swab Specimen Collection for Detection of Avian Influenza A(H5) Viruses (cdc.gov)
  - Detailed protocol distributed to partners via CDC and APHL

- **Universal Transport Media being added to the Instructions for Use of CDC's A/H5**
  - Allow samples in this collection media to be tested using the CDC A/H5 assay

Thank you!



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

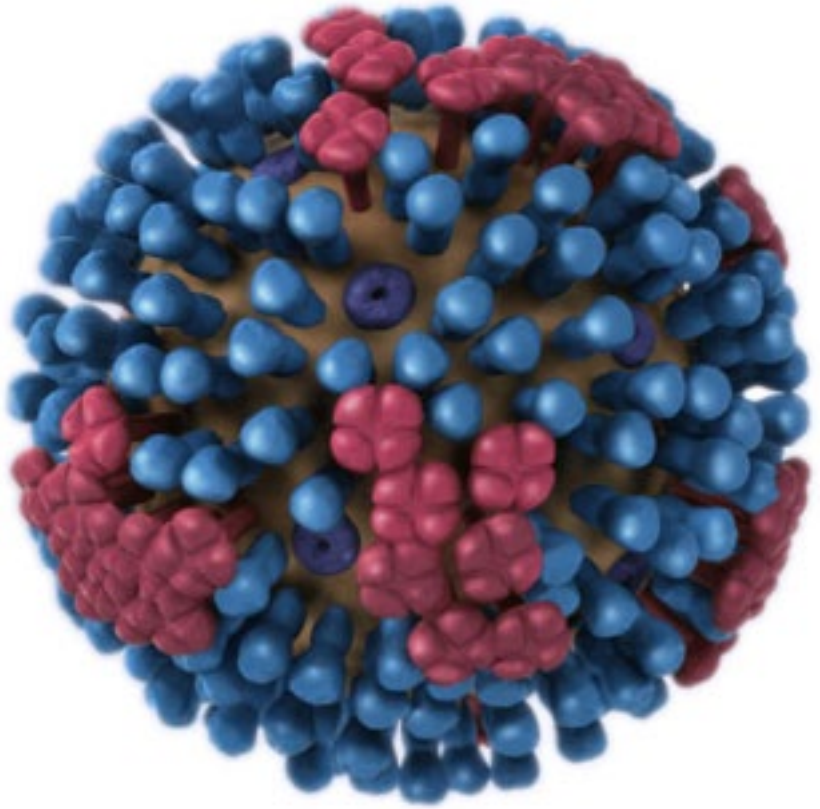
The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

CDC Efforts to Expand Influenza Testing Capacity and Enhance Surveillance

Sean Courtney, PhD

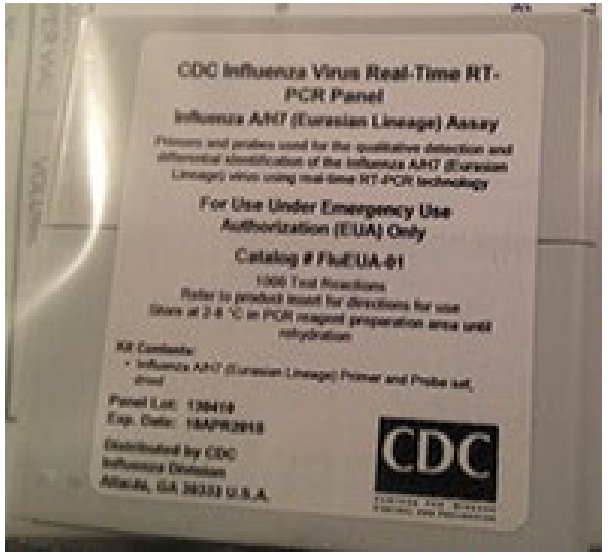
CDC Division of Laboratory Systems

July 15, 2024
LOCS Call



Strategies to Improve Readiness and Testing Capacity

- **Engagement with laboratories and industry partners to gauge interest in test development and validation studies**
- **CDC offers royalty free access to influenza A(H5) diagnostic test assay**
  - Available since 2023
- **CDC working with the Association of Public Health Laboratories (APHL) and the American Clinical Laboratory Association (ACLA) to disseminate information to laboratories**



Royalty Free Licensing Agreements

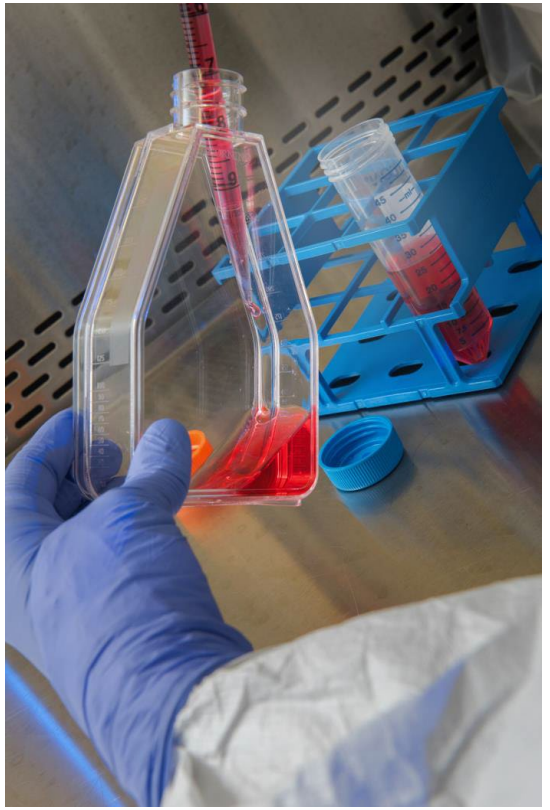
- **CDC Influenza A(H5) diagnostic assay design**
- **15 agreements in progress with industry partners and commercial laboratories**

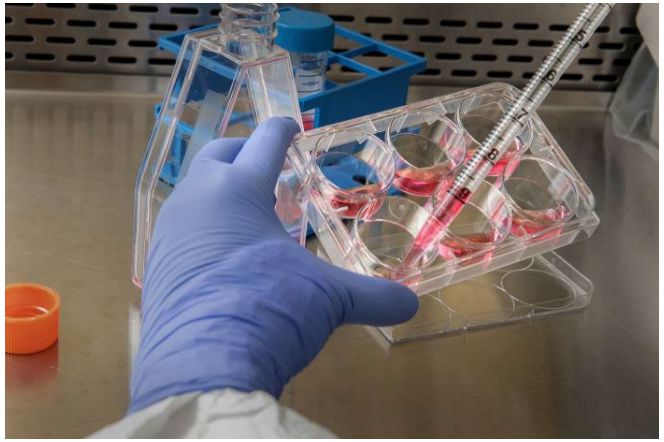
Status	Number of Laboratories
Signed and executed agreements	8
Pending	3
In progress	4

Development of an Influenza A(H5) Test Utilizing CDC Assay Design

- **Manufacturing companies can design, validate, submit, or pre-position for submission to FDA**

- **Engagement with companies to discuss assay designs**
  - Molecular, multiplex, and rapid testing



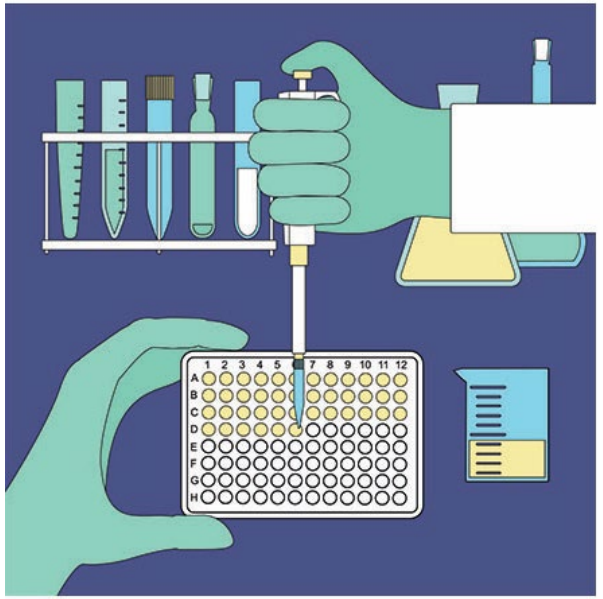


Manufacturing Non-Virulent Control Material

- **Test development requires validation studies**
  - Control material needed for studies

- **Wild type virus and Candidate Vaccine Viruses (CVVs) used as control material require USDA permits to receive material and BSL-3+ (wt) or BSL-2+ (CVV) biosafety labs to handle infectious virus**

- **CDC developing alternative positive control material (BPL or gamma irradiated) inactivated influenza viruses to distribute**
  - Would **not** require USDA permit or enhanced biocontainment to handle



CDC Call to Industry

- **Primary Challenge: Influenza A(H5) subtyping tests only available at CDC and within state/local PHL networks**
  - Lack of access to testing in clinics/hospital networks may lead to delayed diagnosis of influenza A(H5)
  - Testing demand may exceed capacity/slow PH response if H5 epidemiology were to change in the future
- **Open call for innovative solutions to meet the CDC's diagnostic test development needs**
- **Competitive process for test developers to potentially obtain funding from CDC**
  - Develop, validate, manufacture test
  - Apply to FDA for regulatory approval and if approval is obtained to distribute test for influenza A(H5)
- **Concept papers under review**
  - Anticipate award contract(s) by the end of August 2024

CDC Open Call to Industry - Influenza A(H5) Diagnostic Test Development and Validation (SAM.gov)

Enhanced Summer Influenza Surveillance Strategy

- **Enhance surveillance in summer months**
  - Encourage ongoing influenza testing
  - Novel influenza A detection by subtyping Flu A specimens
  - Maintain flow of influenza positive specimens
  - Monitor data for any unexpected patterns
- **Updated guidance for submission criteria published on May 31, 2024**
- **Commercial laboratories submit Flu A and B positive samples to public health laboratories**

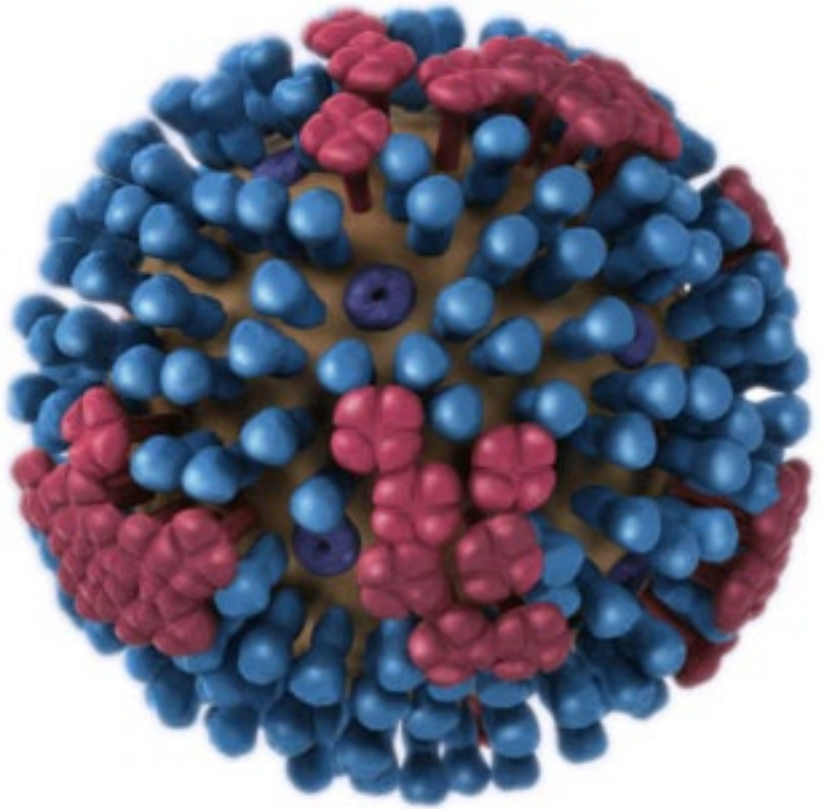
Flu A positive, subtype negative	Yes
Flu A positive, subtype A(H1)	Yes
Flu A positive, subtype A(H1)pdm09	No

Public Health Strategies for Enhanced Summer 2024 Influenza Surveillance | Bird Flu | CDC

Influenza A Data Monitoring | CDC

Thank you!

Disclaimer



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BD Update

Chris Beddard
BD Life Sciences

CDC Update

Blood Culture Quality Tools

Jake D. Bunn, MBA, MLS(ASCP)^{CM}, LSSBB
Clinical Laboratory Scientist
Division of Laboratory Systems
Quality and Safety Systems Branch

National Patient Safety Measure

CMS Consensus-Based Entity (CBE) Endorsement and Maintenance

Adult Blood Culture Contamination Rate; A national measure and standard for clinical laboratories and antibiotic stewardship programs

CBE ID: 3658 **Steward:** Centers for Disease Control and Prevention **Status:** Endorsed **Status Last Updated:** 12 December, 2022

https://p4qm.org/measures/3658

Blood Culture Contamination: An Overview for Infection Control and Antibiotic Stewardship Programs Working with the Clinical Laboratory

[Blood Culture Contamination: An Overview for Infection Control and Antibiotic Stewardship Programs Working with the Clinical Laboratory (cdc.gov)]

Blood Culture Contamination: An Overview for Infection Control and Antibiotic Stewardship Programs Working with the Clinical Laboratory

Purpose

Blood culture contamination can compromise quality of care and lead to unnecessary antibiotic exposure and prolonged length of hospitalization. Microbiology laboratories typically track blood culture contamination rates and can provide data to assist in reducing contamination rates. Infection control programs and microbiology laboratories might participate in designing and implementing interventions to decrease contamination rates, and antibiotic stewardship programs could also be engaged to optimize multidisciplinary quality improvement efforts to decrease blood culture contamination and improve the collection of blood culture specimens.

Background

Blood cultures are important diagnostic tools for identifying the pathogen(s) responsible for a patient's infection. This is especially true of patients with suspected sepsis or septic shock and for patients with suspected infective endocarditis[1, 2]. When indicated, blood cultures should be obtained prior to starting antimicrobial therapy[1, 2]. A conventional blood culture set consists of an aerobic and an anaerobic bottle. For adults, 20-30 mL of blood per venipuncture (depending on the instrument manufacturer) is recommended and may require >2 bottles depending on the system[2]. At least two blood culture sets should be obtained within a few hours of each other via peripheral venipuncture when obtaining blood cultures for a total volume of 40-60 mL of blood to optimize detection of pathogens[2]. The College of American Pathologists laboratory accreditation program states that clinical laboratories have a written policy and procedure for monitoring blood cultures from adults for adequate volume and provide feedback on the results to the collectors[3]. Moreover, the monitoring and reporting of blood culture contamination rates is a laboratory quality best practice[4].

Example of a blood culture set consisting of an anaerobic and an aerobic bottle, with the latter after filling with an appropriate volume of blood.

Because blood is a normally sterile body site, positive blood cultures with a known pathogen have a generally overall high positive predictive value for infection. However, blood culture contamination is a significant problem. In the era of modern blood culturing techniques, virtually all blood culture contamination occurs during collection; the source of contaminants is usually the patient's skin or the hub or cannula of an indwelling catheter (i.e., when an existing catheter is used to obtain the specimen). Frequent causes include poor collection technique and insufficient skin disinfection. Typical organisms include coagulase-negative staphylococci, *Corynebacterium* spp., *Bacillus* spp. other than *Bacillus anthracis*, *Micrococcus* spp., and *Cutibacterium acnes* among others. Consequences include unnecessary antibiotic exposure with the potential for downstream unintended consequences (e.g., possible allergic reactions and *Clostridioides difficile* infection)[5]. Other possible consequences include the unnecessary removal of intravenous catheters or other devices, an increased length of stay, and increased costs[6]. One study found that the average length of stay was 2 days longer in patients with contaminated blood cultures compared to patients with negative cultures[6]. That same study found that direct and indirect hospital costs of a contaminated blood culture were $12,824 compared to $8,286 for a negative blood culture (savings of $4,538 for preventing a contaminated blood culture)[6].

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS 331454-B

Using Blood Culture Contamination Rate for Quality Improvement

Many clinical laboratories routinely calculate and report the blood culture contamination rate as a quality metric at the beginning of the month to evaluate the previous month's rate. In addition to reporting rates regularly to infection prevention and antibiotic stewardship teams, specialized reporting of rates stratified by patient care locations and collection staff (e.g., nursing or phlebotomy teams), can be undertaken to better target improvement efforts.

Prevention/Actions[5]

An in-depth discussion of the ways to address the problem of the blood culture contamination can be found in the review article by Doern *et al.*[5]. A summary of the article follows.

Full article here.

1. **Diagnostic Stewardship**
   Clinicians should strive to obtain blood cultures for the right patients, in the right settings, and at the right time. Blood cultures can be both underused and overused. An example of underuse would be not obtaining blood cultures prior to starting antibiotics for a patient with suspected sepsis. Without a blood culture collected before starting antibiotics, it can be more difficult to appropriately de-escalate antibiotic therapy given that the causative organism is more likely to remain unknown. Also, blood cultures can be underused if the appropriate volume is less than recommended (i.e., two to three 20 mL volumes of blood during initial evaluation of the patient for bacteremia) as this can decrease the sensitivity for pathogen detection. Cultures can also be overused; for example, obtaining repeat cultures in a patient with fever for whom an alternative diagnosis other than bloodstream infection is much more likely. In patients with a very low pretest probability of bloodstream infection, a positive culture is more likely to represent contamination than infection.
2. **Proper Skin Antisepsis**
   Improper skin antisepsis can lead to increases in blood culture contamination rates. It is recommended that the skin be disinfected with an alcohol containing disinfectant and allowed to dry prior to drawing blood cultures[5].
3. **Blood Culture Bottle Disinfection**
   It is standard blood culture practice to disinfect the blood culture bottle tops prior to inoculation[5].

drawn within 24 hours of the positive one is negative, then the institution's contamination rate is 0.5%.

- Review with the laboratory staff the blood culture collection procedures used in the facility and the training received by those responsible for collecting blood cultures
- Explore with laboratory staff how the site where blood cultures are collected is labeled (e.g., venipuncture or central venous catheter) and consider how to encourage collecting blood cultures from preferred sites
- Think about future tracking and facility benchmarking of blood culture utilization (e.g., blood cultures per admissions and patient days) as further data and guidance becomes available

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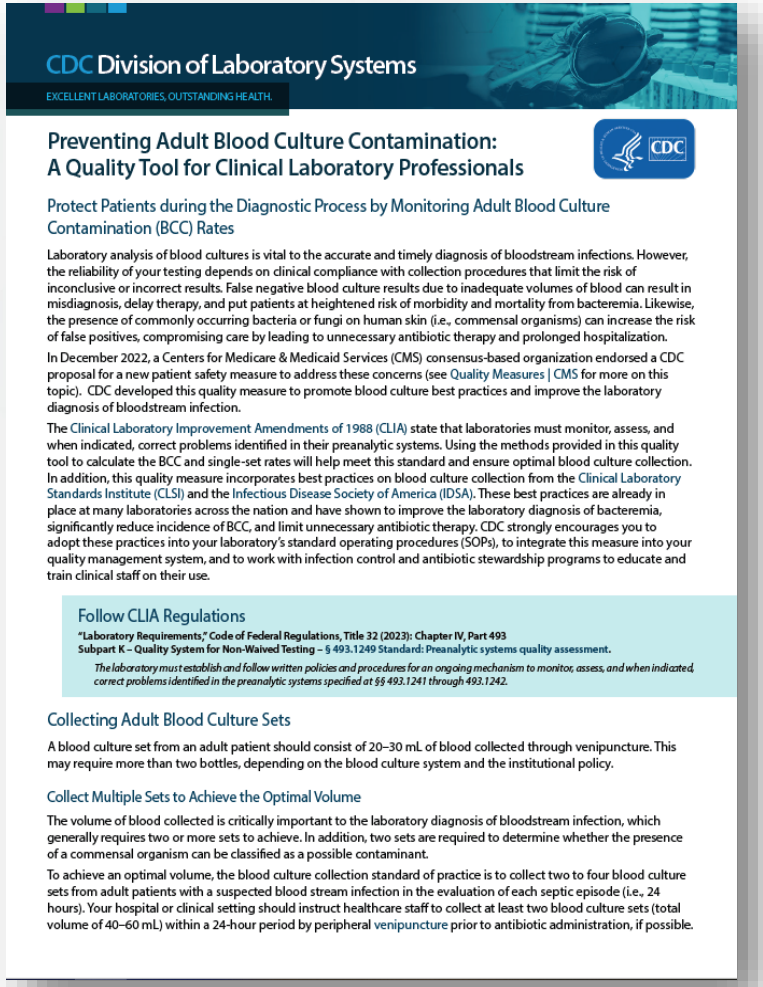
Preventing Adult Blood Culture Contamination: A Quality Tool for Clinical Laboratory Professionals

[Preventing Adult Blood Culture Contamination: A Quality Tool for Clinical Laboratory Professionals | CDC]



CDC Division of Laboratory Systems

EXCELLENT LABORATORIES, OUTSTANDING HEALTH.

Preventing Adult Blood Culture Contamination: A Quality Tool for Clinical Laboratory Professionals

Protect Patients during the Diagnostic Process by Monitoring Adult Blood Culture Contamination (BCC) Rates

Laboratory analysis of blood cultures is vital to the accurate and timely diagnosis of bloodstream infections. However, the reliability of your testing depends on clinical compliance with collection procedures that limit the risk of inconclusive or incorrect results. False negative blood culture results due to inadequate volumes of blood can result in misdiagnosis, delay therapy, and put patients at heightened risk of morbidity and mortality from bacteremia. Likewise, the presence of commonly occurring bacteria or fungi on human skin (i.e., commensal organisms) can increase the risk of false positives, compromising care by leading to unnecessary antibiotic therapy and prolonged hospitalization.

In December 2022, a Centers for Medicare & Medicaid Services (CMS) consensus-based organization endorsed a CDC proposal for a new patient safety measure to address these concerns (see Quality Measures | CMS for more on this topic). CDC developed this quality measure to promote blood culture best practices and improve the laboratory diagnosis of bloodstream infection.

The Clinical Laboratory Improvement Amendments of 1988 (CLIA) state that laboratories must monitor, assess, and when indicated, correct problems identified in their preanalytic systems. Using the methods provided in this quality tool to calculate the BCC and single-set rates will help meet this standard and ensure optimal blood culture collection. In addition, this quality measure incorporates best practices on blood culture collection from the Clinical Laboratory Standards Institute (CLSI) and the Infectious Disease Society of America (IDSA). These best practices are already in place at many laboratories across the nation and have shown to improve the laboratory diagnosis of bacteremia, significantly reduce incidence of BCC, and limit unnecessary antibiotic therapy. CDC strongly encourages you to adopt these practices into your laboratory's standard operating procedures (SOPs), to integrate this measure into your quality management system, and to work with infection control and antibiotic stewardship programs to educate and train clinical staff on their use.

Follow CLIA Regulations

"Laboratory Requirements," Code of Federal Regulations, Title 32 (2023): Chapter IV, Part 493
Subpart K – Quality System for Non-Waived Testing – § 493.1249 Standard: Preanalytic systems quality assessment.

The laboratory must establish and follow written policies and procedures for an ongoing mechanism to monitor, assess, and when indicated, correct problems identified in the preanalytic systems specified at §§ 493.1241 through 493.1242.

Collecting Adult Blood Culture Sets

A blood culture set from an adult patient should consist of 20–30 mL of blood collected through venipuncture. This may require more than two bottles, depending on the blood culture system and the institutional policy.

Collect Multiple Sets to Achieve the Optimal Volume

The volume of blood collected is critically important to the laboratory diagnosis of bloodstream infection, which generally requires two or more sets to achieve. In addition, two sets are required to determine whether the presence of a commensal organism can be classified as a possible contaminant.

To achieve an optimal volume, the blood culture collection standard of practice is to collect two to four blood culture sets from adult patients with a suspected blood stream infection in the evaluation of each septic episode (i.e., 24 hours). Your hospital or clinical setting should instruct healthcare staff to collect at least two blood culture sets (total volume of 40–60 mL) within a 24-hour period by peripheral venipuncture prior to antibiotic administration, if possible.

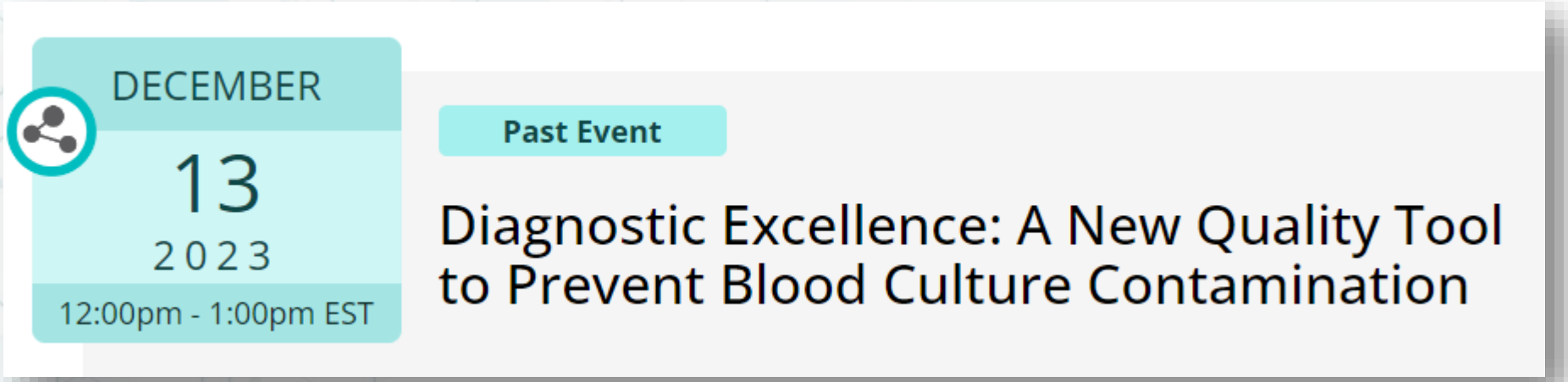
Preventing Adult Blood Culture Contamination: A Quality Tool for Clinical Laboratory Professionals

- Overview of BCC Measure
- Applicable CLIA Regulations
- Critical Steps to include in SOPs
- Calculations for BCC and Single-Sets
- Info on how to classify microorganisms using the NHSN Common Commensals List
- Suggested nudges to inform clinicians of low blood volume and BCC

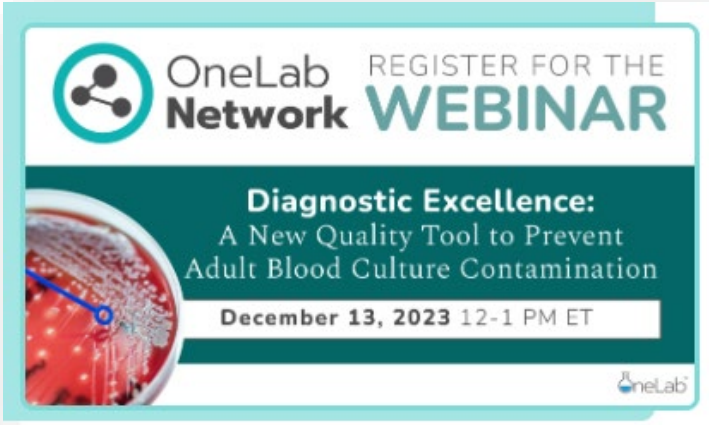
CLIA Law & Regulations (cdc.gov)

https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx

Diagnostic Excellence: A New Quality Tool to Prevent Blood Culture Contamination



[Diagnostic Excellence: A New Quality Tool to Prevent Blood Culture Contamination (cdc.gov)]



https://youtu.be/tkAl4_wmLcw

FDA Updates

U.S. FOOD & DRUG ADMINISTRATION

Disruptions in Availability of BD BACTEC Blood Culture Media Bottles - Letter to Health Care Providers

[Disruptions in Availability of BD BACTEC Blood Culture Media Bottles - Letter to Health Care Providers | FDA] – **July 10, 2024**

Medical Device Shortages List

[Medical Device Shortages List | FDA] – **July 10, 2024**

Category	Product Code (Description)	Availability and Estimated Shortage Duration	Additional Information	Reason for Interruption (per 506J)	Date (YYYY/MM/DD)
Microbiology - Microbiology Devices	**MDB** (System, Blood Culturing)	• Estimated through Q4 2024	To provide recommendations to health care providers and laboratories that use blood culture media bottles intended for bloodstream infection testing, the FDA is providing a MDB Shortage - Letter to Health Care Providers.	• Shortage or discontinuance of a component, part or accessory of the device.	2024/07/10 Initial

Take Home Messages

Those who collect blood cultures should be:

- Performing routine disinfection prior to collection to minimize the risk of contamination of the blood culture and the need to recollect additional blood cultures.
- Ensuring proper blood volume collection to avoid a need to recollect additional blood cultures.

Questions?

Contact:
DLSinquiries@cdc.gov

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

Blood Culture Stewardship Opportunities

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7/15/2024

Disclosures

- No relevant financial disclosures
- Both speakers have received funding from the CDC Prevention Epicenters Program and AHRQ for blood culture stewardship projects.
- The content of this presentation is solely the responsibility of the speakers and does not represent the official view of any funding agency

Opportunities to improve inpatient blood culture (BCx) utilization

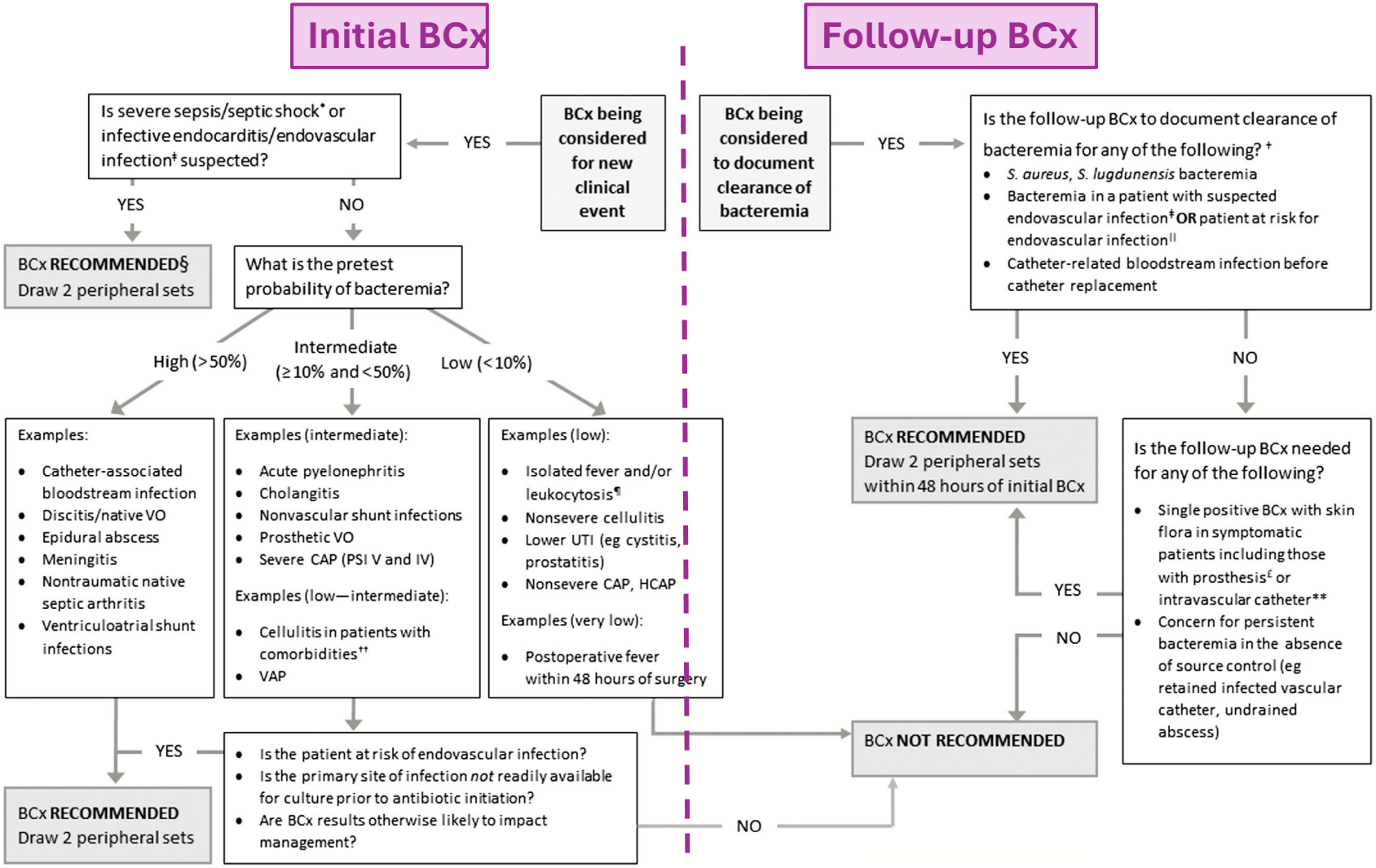
- >90% of BCx obtained from inpatients are negative  ng

- Based on an evidence-based algorithm (next slide), 30% of BCx in a medical ICU and 50% of BCx in medicine floors at a tertiary hospital in Baltimore were inappropriate
  - 60% of BCx in the ICU at a tertiary center in NYC
  - 40% of BCx in a Swiss hospital
  - 25% of BCx in a SICU at a tertiary hospital in North Carolina

- In 40-80% of BCx the appropriate volume is not collected
- ~20% of bacteremia cases were missed due to lack of anaerobic BCx, single sets, or inappropriate patient selection in a national study of BCx practices in Israel

Fabre V et al . J Clin Microbiol 2022, Fabre V et al. J Clin Microbiol 2020, Siev A et al. J Crit Care 2023, Drager S et al. Eur J Intern Med 2022, Temkin E, JAMA Netw Open 2022

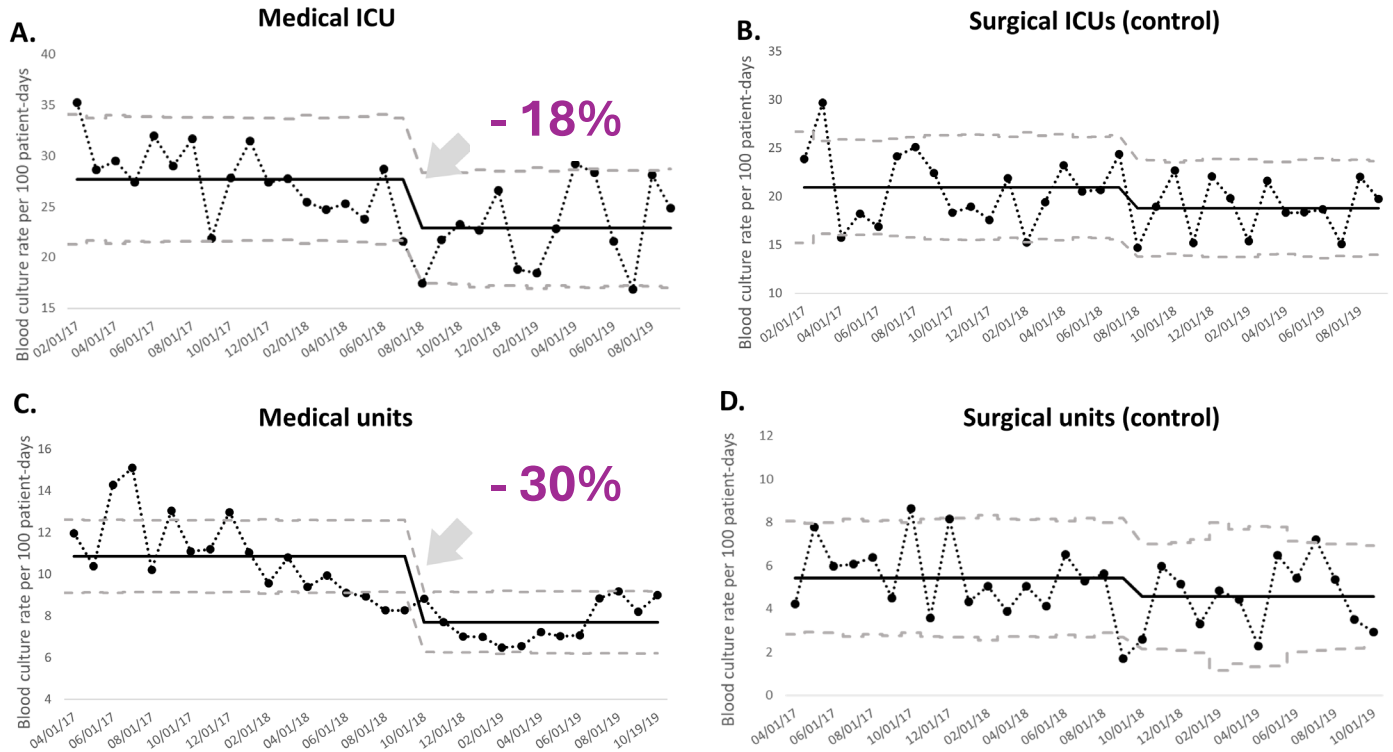
Algorithm for bacterial blood cultures recommendations in non-neutropenic (adult) patients.



Clin Infect Dis, Volume 71, Issue 5, 1 September 2020, Pages 1339–1347, https://doi.org/10.1093/cid/ciaa039

Implementation of a BCx algorithm to reduce unnecessary BCx in adult medicine units

- Education on BCx indications & collection best practices to ordering providers
- Implementation of the evidence-based BCx algorithm to guide BCx decisions (paper-based)
- Regular feedback regarding BCx utilization rates, and examples of inappropriate BCx



- **Reduction of single sets** in medicine floors
- **Increase in BCx positivity** in ICU
- No impact on Sep-1 measure, readmission, or mortality

Other hospitals have implemented the BCx algorithm (adult surgical ICUs at Duke[1], MICU and SICU at Baylor[2]) and have observed a 20-70% relative reduction in BCx utilization without safety concerns (readmission, length of stay, or 30-day mortality)

Fabre V, et al . A Diagnostic Stewardship Intervention To Improve Blood Culture Use among Adult Nonneutropenic Inpatients: the DISTRIBUTE Study. J Clin Microbiol. 2020

[1]Seidelman J, et al. Antimicrob Steward Healthc Epidemiol. 2022, [2]Wanf MC et al. Infect Control Hosp Epidemiol. 2024

Opportunities to improve inpatient BCx utilization: Units with high BCx utilization

Hospital University of Pennsylavania (2015) –excluded BCx drawn in the ED for patients not admitted to the hospital-

- **General medicine 51.1%**
- **Oncology 25.9%**
- **Intensive care unit 19.0%**
- Surgery 18.4%
- Transplant 2.8%
- Emergency 1.8%

Chen AI et al . Infection Control & Hospital Epidemiology 2018

Delphi consensus recommendations for BCx in critically ill children

BrighT STAR
A LEARNING HEALTH COMMUNITY

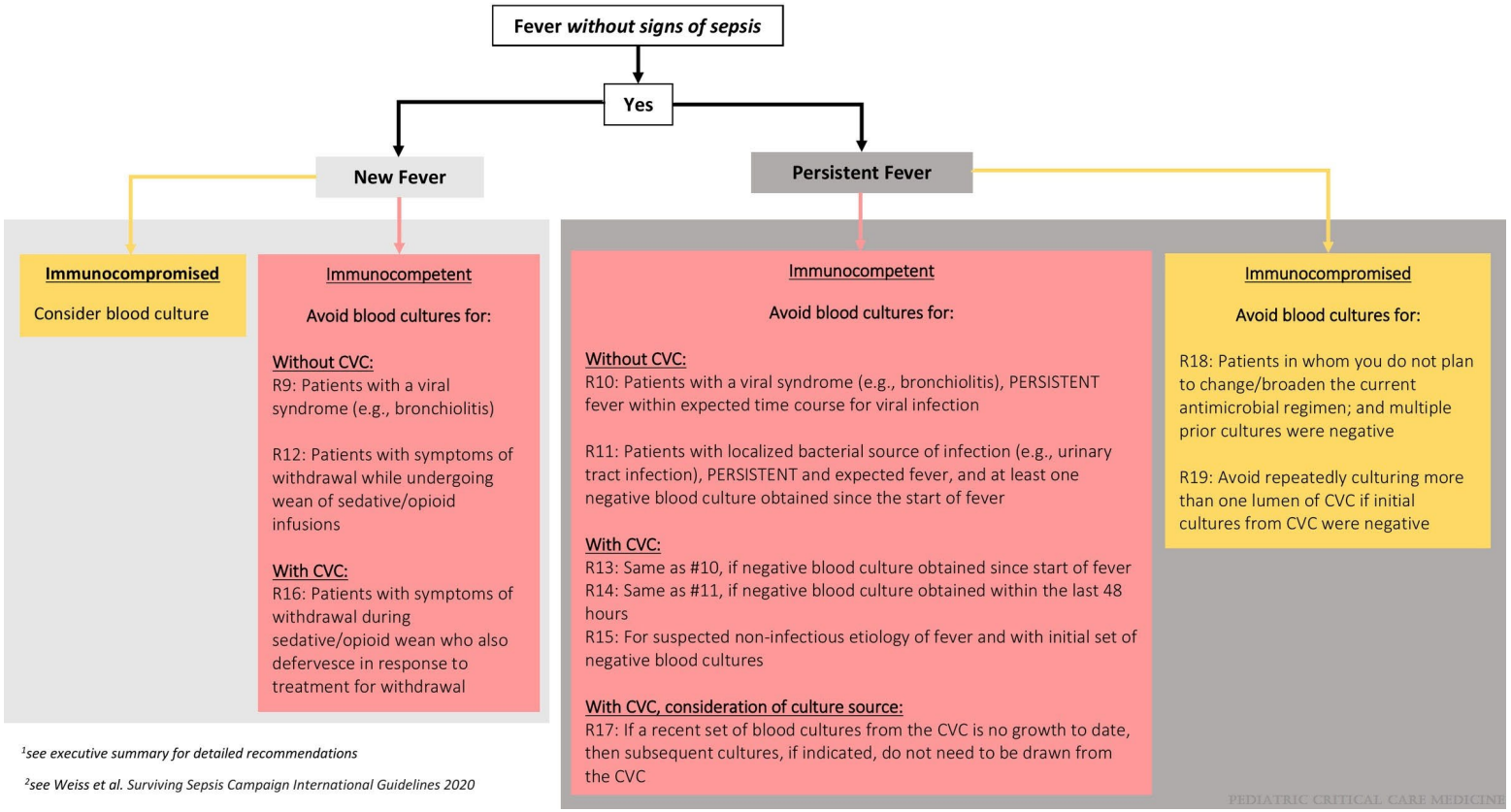
http://HopkinsChildrens.org/brightstar

Consensus recommendations (R1-R19; see text) for blood culture use in critically ill children without signs of sepsis[1,2]

"To Do" before blood culture decision:
R1: Review the clinical data (e.g., vital signs, laboratory/imaging, urine output, recent cultures, antimicrobial therapy)
R2: Examine the patient
R3: Discuss the patient's clinical status with the bedside nurse

Do NOT:
R7: Draw blood cultures from peripheral IVs
R8: Obtain blood culture for NEW fever within 24 hours of surgery and with no signs of sepsis; WITH or WITHOUT a CVC in place

In ASYMPTOMATIC patients, avoid blood cultures:
R4: For surveillance (e.g., daily screening blood cultures). In particular:
R4a: on ECMO
R4b: on CRRT
R4c: in the immunocompromised WITH or WITHOUT CVC
R5: In patients who have inadvertent CVC disconnection.
R6: In patients who have a broken or cracked CVC

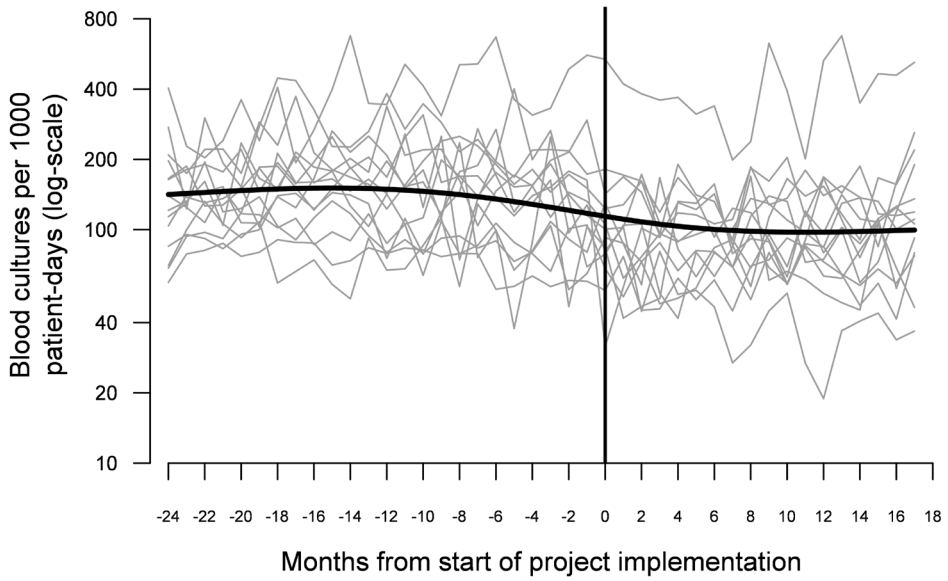


[1] *see executive summary for detailed recommendations*

[2] *see Weiss et al. Surviving Sepsis Campaign International Guidelines 2020*

Woods-Hill CZ, et al. Consensus Recommendations for Blood Culture Use in Critically Ill Children Using a Modified Delphi Approach. Pediatr Crit Care Med. 2021 Apr 23.

BrighT STAR results: blood cultures



33% **relative reduction in BCx rate (95% CI: 26-39%)**

- ***36%*** relative reduction in CLABSI rate (95% CI: 20-49%)
- ***13%*** relative reduction in broad-spectrum antibiotic use*
- No difference in mortality, PICU readmission, PICU length of stay before and after the intervention
- No difference in the number of sepsis, severe sepsis/septic shock cases before and after the intervention

*Days of broad-spectrum antibiotics for PICU days ≥ 3

Woods-Hill CZ et al, JAMA Pediatrics 2022

Summary

- BCx stewardship interventions have shown to safely reduce overall BCx use, while improving its utilization. This is a great opportunity to introduce BCx stewardship in your institutions and sustain it once the BCx bottle shortage subsides

- Microbiologists and Antibiotic stewardship/HEIC teams must work together to develop an appropriate BCx stewardship plan adapted to their current and anticipated BCx bottle supply
  - Implement guidance on appropriate indications with focus on reducing low yield BCx (include in local guidelines, educate ordering providers)
  - Implement EHR modifications
  - Implement prior-authorization

Summary: Low-yield BCx in adult inpatients

LOW-YIELD INITIAL BLOOD CULTURES

- Non-severe CAP
- Post-op fever within 48hs
- Isolated fever
- Isolated leukocytosis
- Persistent fever without clinical change and negative blood cultures in last 48-72 hours
- Persistent leukocytosis without clinical change and negative blood cultures in last 48-72 hours
- Non-severe CAP
- Non-severe cellulitis
- Post-operative fever within 48hs from surgery
- Lower UTI (cystitis, prostatitis)
- Surveillance blood cultures (e.g., before procedures, line placement, TPN initiation, etc.) in patients without suspicion for bacteremia

LOW-YIELD FOLLOW-UP BLOOD CULTURES

- Repeat blood cultures to document clearance of bacteremia caused by organisms other than *Staphylococcus aureus*, *Staphylococcus lugdunensis*, or *Candida* in patients without infective endocarditis/endovascular infection (e.g., cardiac device infection, septic thrombophlebitis) who showed clinical response and source control has been achieved

- Repeat blood cultures to rule out blood culture contamination in immunocompetent patients without prosthetic implants

Fabre V, Sharara SL, Salinas AB, Carroll KC, Desai S, Cosgrove SE. Does This Patient Need Blood Cultures? A Scoping Review of Indications for Blood Cultures in Adult Nonneutropenic Inpatients. Clin Infect Dis 2020

SUGGESTED STRATEGIES TO CONSERVE BCx BOTTLES

- ✓ Meet with the Clinical Microbiology Laboratory to discuss current and expected BCx bottle supplies
- ✓ Identify clinical areas/units with highest BCx utilization
- ✓ Target high-use areas for education first
- ✓ Consider a stepwise approach to conserve BCx bottles based on anticipated supply reduction
- ✓ Prioritize reducing low-yield BCx first (expected reduction ~40% -70% depending on local practices)
- ✓ Meet with EHR to discuss implementation of electronic decision support tools to optimize BCx orders
  - Make most recent BCx results available upon clicking on a new BCx order
  - Hard-stops for repeat BCx
  - Include a link to the BCx algorithm or list low-yield indications to deter clinicians from ordering unnecessary BCx
  - Critically review order sets that contain blood cultures and remove blood cultures from order sets for conditions with low risk of bacteremia

Acknowledgements

- Society of Healthcare Epidemiology of America (2018 SHEA Reserach Scholar Award-Valeria Fabre)

- CDC Prevention Epicenters Program (currently funding a JHU led large collaborative project to characterize and improve blood culture utilization in hospitalized adults)

- JHU collaborators
  - Sara E. Cosgrove
  - Karen C. Carroll
  - Trish Simner

- BrighT STAR – funded by AHRQ, co-led by Dr. Charlotte Woods-Hill

Next Scheduled Call

Monday, August 19
3 PM - 4 PM ET

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

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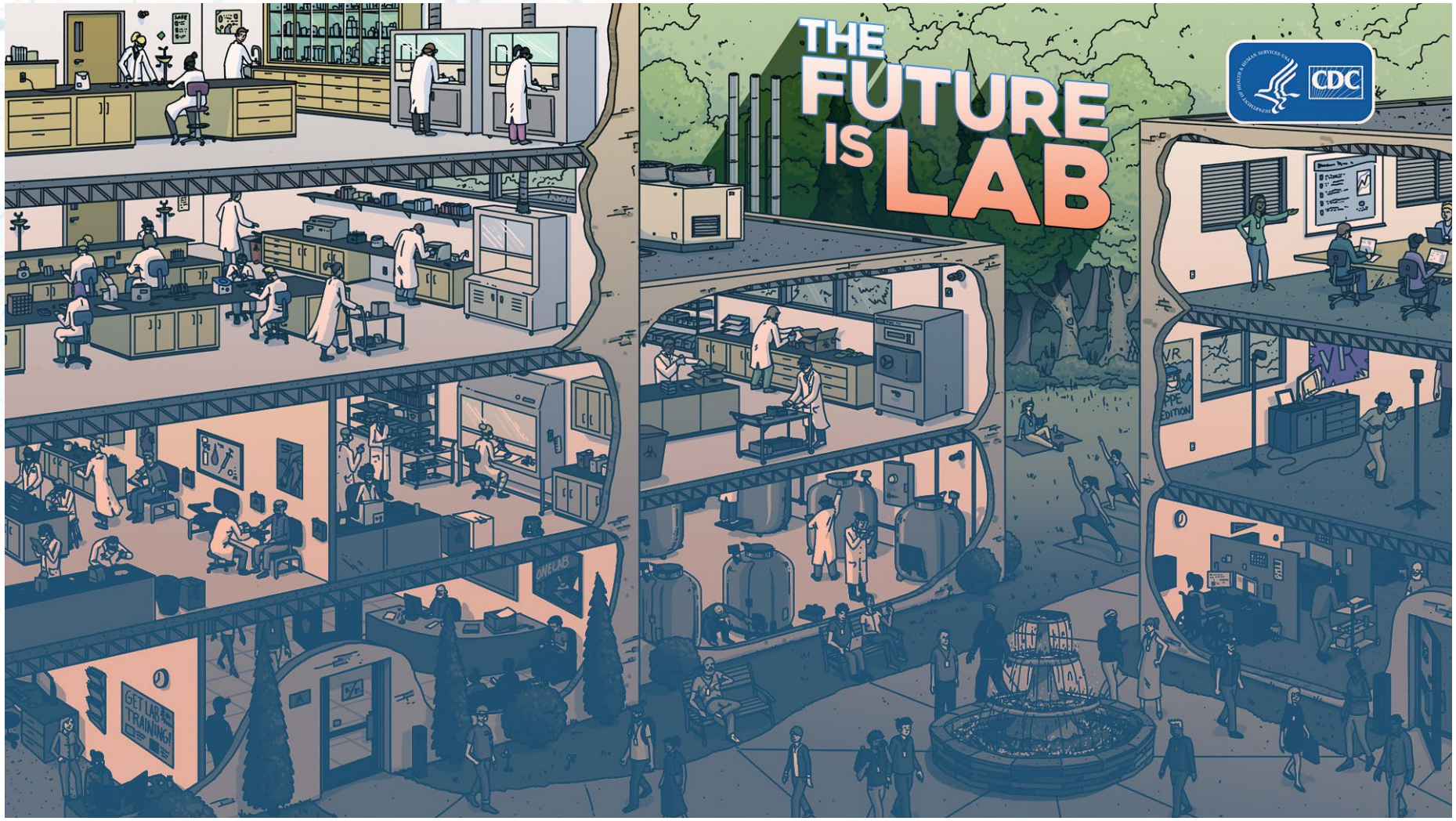
Thank You For Your Time!



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