Clinical Laboratory COVID-19 Response Call

Monday, August 17th, 2020 at 3:00 PM EDT

- **Welcome**
  - Jasmine Chaitram, CDC Division of Laboratory Systems (DLS)
- **Antigen Testing—Video Update**
  - Reynolds (Ren) Salerno, CDC Division of Laboratory Systems (DLS)
- **New CDC FAQs**
  - Jasmine Chaitram, CDC Division of Laboratory Systems (DLS)
- **Review of Required Data Elements for Laboratory Reporting**
  - Sara Brenner, U.S. Department of Health and Human Services (HHS)
- **Status and Federal Procurement of Testing Supplies**
  - Tammy Beckham, U.S. Department of Health and Human Services (HHS)
- **FDA Update**
  - Tim Stenzel U.S. Food and Drug Administration (FDA)

Schedule for Clinical Laboratory COVID-19 Response Calls

The next call is scheduled for **Monday, August 31st** from 3:00 PM to 4:00 PM EDT.

CDC Information for Laboratories

- **Interim Guidance for Collecting, Handling, and Testing Clinical Specimens**
  https://www.cdc.gov/coronavirus/2019-nCoV/lab/guidelines-clinical-specimens.html
- **Diagnostic Tools and Virus**
  https://www.cdc.gov/coronavirus/2019-ncov/lab/tool-virus-requests.html
- **Emergency Preparedness for Laboratory Personnel**
  https://emergency.cdc.gov/labissues/index.asp
- **CDC's Laboratory Outreach Communication System (LOCS)**
  https://www.cdc.gov/csels/dls/locs/
- **IVD Industry Connectivity Consortium**
  https://ivdconnectivity.org/livd/
- **LOINC In-Vitro Diagnostic (LIVD) Test Code Mapping for SARS-CoV-2 Tests**
  https://www.cdc.gov/csels/dls/sars-cov-2-livd-codes.html

We Want to Hear From You!

Training and Workforce Development

Questions about education and training?

Contact LabTrainingNeeds@cdc.gov

To Ask a Question?

- **Using the 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

Antigen Testing—Video Update

Reynolds (Ren) Salerno
CDC Division of Laboratory Systems (DLS)

Interim Guidance for Rapid Antigen Testing for SARS-CoV-2

Reynolds M Salerno, PhD
Director
Division of Laboratory Systems

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

Testing Strategies for SARS-CoV-2

	Diagnostic	Screening	Surveillance
Symptomatic or Known or Suspected Exposure	**Yes**	**No**	N/A
Asymptomatic without Known or Suspected Exposure	**No**	**Yes**	N/A
Characterize **Incidence** and **Prevalence** in the Community	N/A	N/A	**Yes**

Regulatory Requirements

	Diagnostic	Screening	Surveillance
Testing can be Performed in a **CLIA-certified Laboratory** or Testing Site	Yes	Yes	Yes
Testing can be Performed in a **Non-CLIA-Certified Laboratory** or Testing Site	No	No	Yes
Test System Must be **FDA Authorized** or be Offered under the Policies in FDA's Guidance	Yes	Yes	No

Interim Guidance for Rapid Antigen Testing for SARS-CoV-2

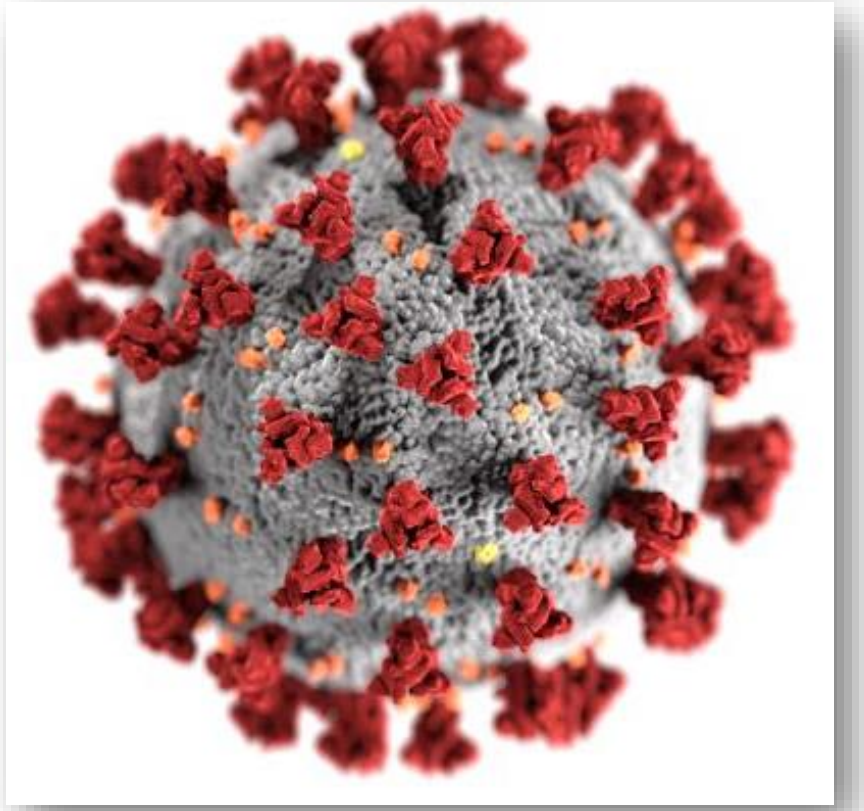
Intended for:

1. Clinicians
   - **Order** antigen tests
   - **Receive** antigen results
   - **Perform** point-of-care testing
2. Laboratory professionals
   - **Perform** antigen testing in a laboratory setting and report results
   - **Perform** antigen testing at the point of care and report results

Rapid Antigen Testing for SAR-CoV-2

Rapid antigen tests

- Immunoassays that detect the presence of a specific viral antigen, which implies current viral infection.
- Currently authorized to be performed on nasopharyngeal or nasal swab specimens placed directly into the assay's extraction buffer or reagent.
- Relatively inexpensive, can be used at the point-of-care, and can return results in approximately 15 minutes.



Current FDA-Authorized Antigen Tests

- Instructions for Use: intended for “individuals who are suspected of COVID-19 by their healthcare provider **within the first five days** of the onset of symptoms”

- Sensitivity of 84% and 97% compared to RT-PCR
  - May cause the test to return a negative result, while a more sensitive test, such as RT-PCR, may return a positive result
  - Reporting negative results differ depending on the device

- Specificity of 100% compared to RT-PCR
  - False positive results are unlikely
  - Positive test results can be reported as positives

Pretest Probability and Likelihood of Positive and Negative Predictive Values

Pretest Probability*	Negative Predictive Value**	Positive Predictive Value**	Impact on Test Results
Low	High	Low	Increased likelihood of **False Positives** Increased likelihood of **True Negatives**
High	Low	High	Increased likelihood of **True Positives** Increased likelihood of **False Negatives**

*Sensitivity and specificity of tests are generally stable and not affected by pretest probability.

**Predictive values are affected by pretest probability.

“Gold Standard” for Clinical Diagnostic Detection of SARS-CoV-2 Remains RT-PCR

- It may be necessary to confirm a rapid antigen test result with a nucleic acid test, especially if the result of the antigen test is inconsistent with the pretest probability (infection prevalence and clinical context)
- When confirming an antigen test result with a RT-PCR test, it is important that the time interval between the two sample collections is less than two days, and there have not been any opportunities for new exposures between the two tests.
- If more than two days separates the two tests, or there have been opportunities for new exposures between the two tests, the RT-PCR test should be considered a separate test – not a confirmatory test.
- If RT-PCR testing is not available, clinical discretion can be used in whether to recommend the patient isolate.

Collection and Handling of Clinical Specimens

Improper specimen collection may cause some swabs to have limited amounts of viral genetic or antigenic material for detection

Inadequate quality assurance procedures could result in cross contamination of the specimen, which could cause inaccurate test results, and exposure to the staff

Delays from sample collection to testing should be minimized

Biosafety measures and instructions for use should be followed precisely to ensure accurate testing and safety of those who perform the testing

Evaluating the Results of Antigen Testing for SARS-CoV-2

What to consider

1. Performance characteristics

(e.g. sensitivity, specificity), instructions for use of the FDA-authorized assay

2. Prevalence of COVID-19

in that particular community (positivity rate over the previous 7–10 days or cases per population)

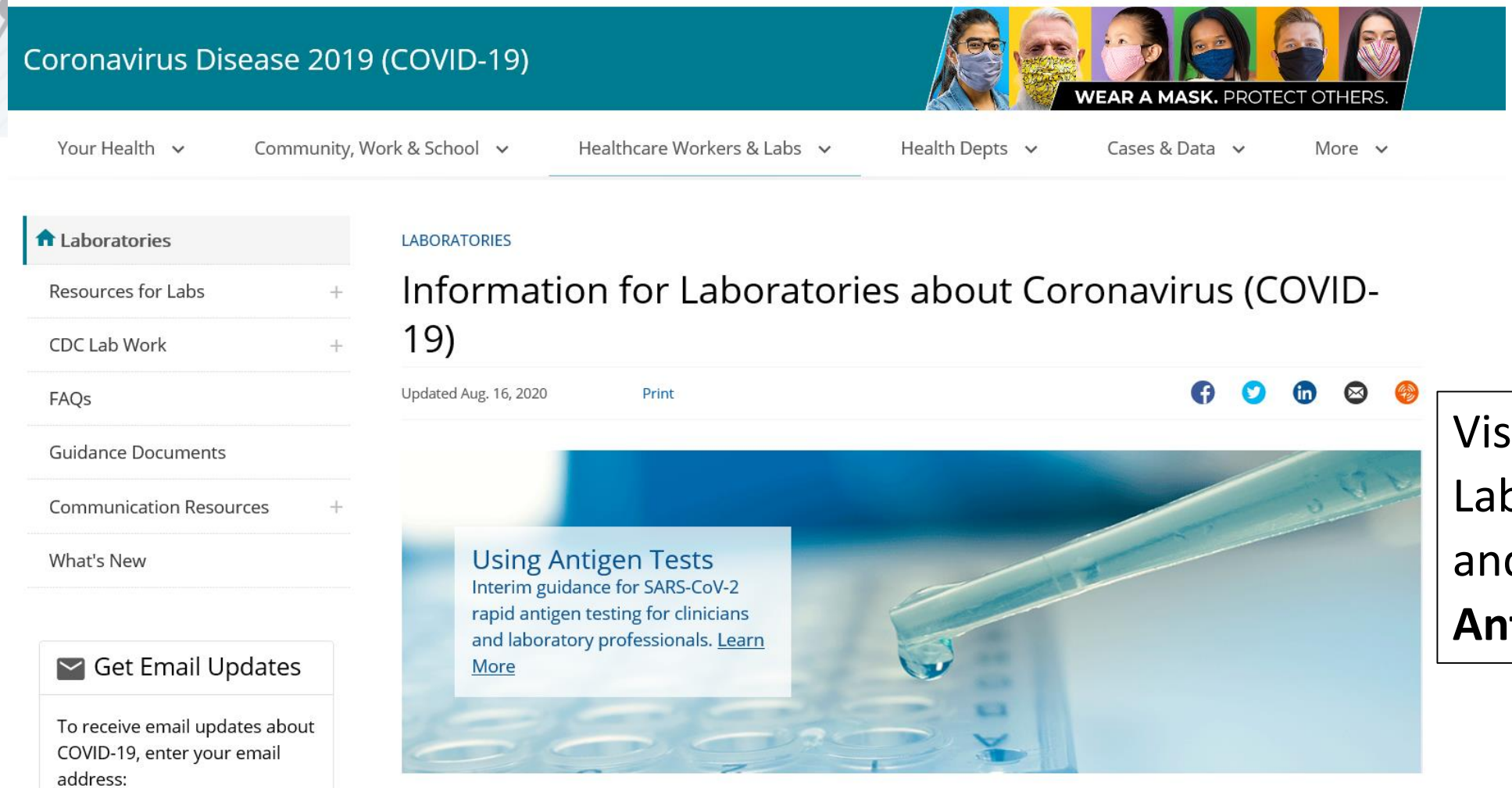
3. Clinical and epidemiological context

of the person who has been tested

Reporting Rapid Antigen Test Results for SARS-CoV-2 to Health Departments and Patients

	Diagnostic	Screening	Surveillance
Returned to **Individuals** and **Healthcare Providers** for clinical decision making	**Yes**	**Yes**	**No**
Returned in Aggregate to Requesting Institution	**No**	**No**	**Yes**
Reported to **Local, State, Territorial, or Tribal Health Department** according to the CARES Act	**Yes**	**Yes**	Only if requested; must be in aggregate

Available on the CDC COVID-19 Laboratory Website



Visit the CDC COVID-19 Laboratory Website and click the **Using Antigen Tests** tab.

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

Use of trade names is for identification only and does not imply endorsement by U.S. Centers for Disease Control and Prevention.

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

New COVID-19 Resources for Laboratories

- New Antigen Testing Guidance https://www.cdc.gov/coronavirus/2019-ncov/lab/resources/antigen-tests-guidelines.html

- New Additions to the Frequently Asked Question (FAQs) about COVID-19 for Laboratories
  - False Negatives and False Positives from COVID-9 Testing https://www.cdc.gov/coronavirus/2019-ncov/lab/faqs.html#Interpreting-Results-of-Diagnostic-Tests
  - Surveillance, Screening, and Diagnostic Testing for COVID-19 https://www.cdc.gov/coronavirus/2019-ncov/lab/faqs.html#Testing-Strategies-for-SARS-CoV-2

New CDC FAQs

Jasmine Chaitram
CDC Division of Laboratory Systems (DLS)

Lab Data Reporting Update

August 17, 2020

Sara Brenner, MD, MPH

COVID-19 National Response Operations: HHS Data Strategy and Execution Workgroup (DSEW)

Associate Director for Medical Affairs; Chief Medical Officer for In Vitro Diagnostics

Office of In Vitro Diagnostics & Radiological Health (OIR)`

Center for Devices & Radiological Health (CDRH)

U.S. Food & Drug Administration

Background

HHS COVID-19 Laboratory Data Reporting Guidance – *June 4, 2020*
https://www.hhs.gov/sites/default/files/covid-19-laboratory-data-reporting-guidance.pdf

- Under CARES Act 116-136, § 18115(a)
- Applies to all testing performed in CLIA labs and home use settings
- Outlines the data elements for COVID-19 test data submission to HHS
- Implementation deadline: August 1, 2020
- References SHIELD COVID-19 test mapping *(published by CDC)*
  https://www.cdc.gov/csels/dls/sars-cov-2-livd-codes.html

Additional Implementation Guidance – *July 31, 2020*

- FAQs https://www.hhs.gov/answers/is-additional-information-including-technical-specifications-available-to-support-laboratories-with-implementation/index.html
  - Implementation Guide https://www.hhs.gov/sites/default/files/hhs-guidance-implementation.pdf
  - HL7 V2 Messaging
    https://confluence.hl7.org/display/OO/Proposed+HHS+ELR+Submission+Guidance+using+HL7+v2+Messages

HHS COVID-19 Laboratory Reporting Guidance

- Helps assure a rapid and thorough public health response to the COVID-19 pandemic
- Enables the ability to maximize the utility of Real-World Evidence (RWE)
- Contributes to understanding disease incidence and trends
  - real-time epidemiology,
  - contact tracing,
  - inform distribution of testing resources and other COVID-19 supply chains
- Empowers patients with:
  - access to personalized test results and guidance
  - Knowledge to take action to protect themselves, their families, and their communities.

Reportable Data Elements for All COVID-19 Tests

(summary; reportable to federal/state/local authorities, as appropriate)

Test orders:

- Test ordered
- Ordering provider name & NPI
- Ordering provider location/contact

Test results:

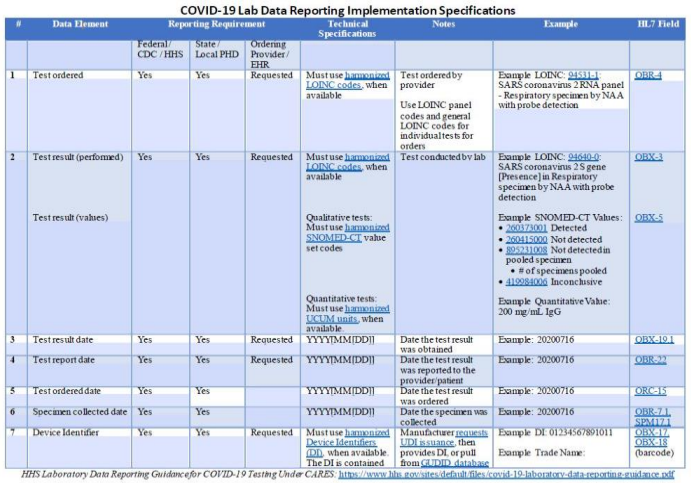
- Test result
- Device Identifier
- Specimen source
- Date specimen collected
- Test Result date
- Accession #/Specimen ID
- Performing facility name/CLIA#
- Performing facility location

Patient Demographics:

- Unique patient identifier
- Patient name
- Patient date of birth/age
- Patient race
- Patient ethnicity
- Patient sex
- Patient location/contact
- Patient occupation
- Patient congregate care/living setting
- Patient symptoms
- Patient test & hospitalization history
- Patient pregnancy status

Harmonization Tools

HHS COVID-19 Guide:

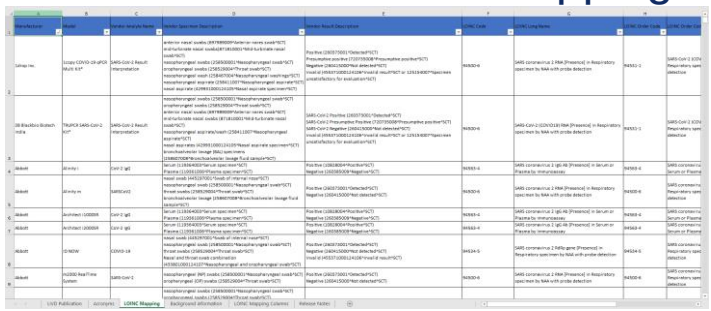


COVID-19 Lab Data Reporting Implementation Specifications

#	Data Element	Reporting Requirement			Technical Specifications	Notes	Example	HL7 Field
		Federal/ CDC / HHS	State / Local PHD	Ordering Provider / EHR				
1	Test ordered	Yes	Yes	Requested	Must use harmonized LOINC codes, when available	Test ordered by provider Use LOINC panel codes and general LOINC codes for individual tests for orders	Example LOINC: 94531-1: SARS coronavirus 2 RNA panel - Respiratory specimen by NAA with probe detection	OBR-4
2	Test result (performed) Test result (values)	Yes	Yes	Requested	Must use harmonized LOINC codes, when available Qualitative tests: Must use harmonized SNOMED-CT value set codes Quantitative tests: Must use harmonized UCUM units, when available	Test conducted by lab	Example LOINC: 94640-0: SARS coronavirus 2 S gene [Presence] in Respiratory specimen by NAA with probe detection Example SNOMED-CT Values: • 260373001 Detected • 260415000 Not detected • 895231008 Not detected in pooled specimen • # of specimens pooled • 419984006 Inconclusive Example Quantitative Value: 200 mg/mL IgG	OBX-3 OBX-5
3	Test result date	Yes	Yes	Requested	YYYY[MM[DD]]	Date the test result was obtained	Example: 20200716	OBX-19.1
4	Test report date	Yes	Yes	Requested	YYYY[MM[DD]]	Date the test result was reported to the provider/patient	Example: 20200716	OBR-22
5	Test ordered date	Yes	Yes		YYYY[MM[DD]]	Date the test result was ordered	Example: 20200716	ORC-15
6	Specimen collected date	Yes	Yes		YYYY[MM[DD]]	Date the specimen was collected	Example: 20200716	OBR-7.1, SPM17.1
7	Device Identifier	Yes	Yes	Requested	Must use harmonized Device Identifiers (DI), when available. The DI is contained	Manufacturer requests UDI issuance, then provides DI, or pull from GUDID database	Example DI: 01234567891011 Example Trade Name:	OBX-17, OBX-18 (barcode)

HHS Laboratory Data Reporting Guidance for COVID-19 Testing Under CARES: https://www.hhs.gov/sites/default/files/covid-19-laboratory-data-reporting-guidance.pdf

COVID-19 Test Code Mapping:



COVID-19 Lab Data Reporting Implementation Specifications

#	Data Element	Reporting Requirement			Technical Specifications	Notes	Example	HL7 Field
		Federal / CDC / HHS	State / Local PHD	Ordering Provider / EHR				
1	Test ordered	Yes	Yes	Requested	Must use harmonized LOINC codes, when available	Test ordered by provider Use LOINC panel codes and general LOINC codes for individual tests for orders	Example LOINC: 94531-1: SARS coronavirus 2 RNA panel - Respiratory specimen by NAA with probe detection	OBR-4
2	Test result (performed) Test result (values)	Yes	Yes	Requested	Must use harmonized LOINC codes, when available Qualitative tests: Must use harmonized SNOMED-CT value set codes Quantitative tests: Must use harmonized UCUM units, when available.	Test conducted by lab	Example LOINC: 94640-0: SARS coronavirus 2 S gene [Presence] in Respiratory specimen by NAA with probe detection Example SNOMED-CT Values: • 260373001 Detected • 260415000 Not detected • 895231008 Not detected in pooled specimen • # of specimens pooled • 419984006 Inconclusive Example Quantitative Value: 200 mg/mL IgG	OBX-3 OBX-5
3	Test result date	Yes	Yes	Requested	YYYY[MM[DD]]	Date the test result was obtained	Example: 20200716	OBX-19.1
4	Test report date	Yes	Yes	Requested	YYYY[MM[DD]]	Date the test result was reported to the provider/patient	Example: 20200716	OBR-22
5	Test ordered date	Yes	Yes		YYYY[MM[DD]]	Date the test result was ordered	Example: 20200716	ORC-15
6	Specimen collected date	Yes	Yes		YYYY[MM[DD]]	Date the specimen was collected	Example: 20200716	OBR-7.1, SPM17.1
7	Device Identifier	Yes	Yes	Requested	Must use harmonized Device Identifiers (DI), when available. The DI is contained	Manufacturer requests UDI issuance, then provides DI, or pull from GUDID database	Example DI: 01234567891011 Example Trade Name:	OBX-17, OBX-18 (barcode)

HHS Laboratory Data Reporting Guidance for COVID-19 Testing Under CARES: https://www.hhs.gov/sites/default/files/covid-19-laboratory-data-reporting-guidance.pdf

Device Identifier (DI)

(part of the Unique Device Identifier)

How can you report a DI?

- There are 2 appropriate options:
  - Use the DI of the UDI (preferred; e.g., 0123456789101l)
  - Use the TradeName_Company (e.g., XpertXpressSARS-CoV-2_Cepheid)

Where can a lab obtain a DI?

From the manufacturer. If a lab does not have a DI for a specific device, we recommend that the lab reach out to the device manufacturer to obtain the DI. If the manufacturer does not yet have a DI and needs assistance, support is available at SHIELD-LabCodes@fda.hhs.gov to help them navigate through the process.

How can a manufacturer obtain a DI?

A manufacturer can obtain a UDI-DI through one of the 3 issuing agencies approved for generating a UDI, listed here:

https://www.fda.gov/medical-devices/unique-device-identification-system-udi-system/contact-fda-accredited-issuing-agency

Scenarios for Reporting Device Identifiers

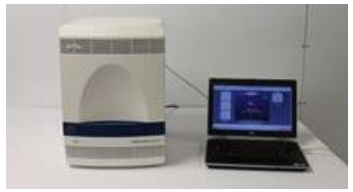
Manufactured IVD

Closed/Contained

Self-Contained
(Lateral Flow)

Closed Platform
(Cartridge-Fed RT-PCR Thermocycler)

On-Label Open Platform



On-Label Open Platform
(RT-PCR Thermocycler)

+

GMP Reagents
(RT-PCR reagents for open platform)

Lab Developed IVD

Off-Label Mix/Match

Off-Label Open Platform
(RT-PCR Thermocycler)

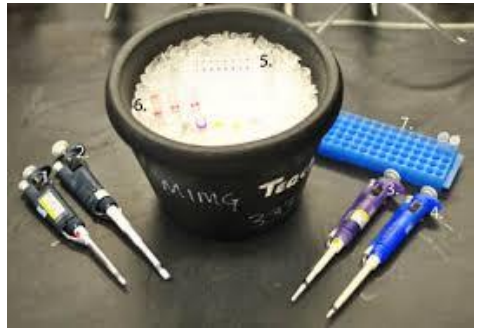
+

GMP Reagents
(RT-PCR reagents for open platform)

On-Label Open Platform

Open Platform
(RT-PCR Thermocycler)

+



LDT Reagents
(RT-PCR reagents for open platform)

Scenarios for Reporting Device Identifiers

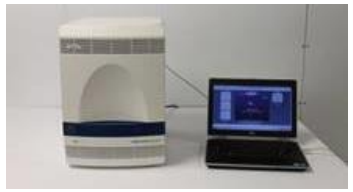
Manufactured IVD

Closed/Contained

Test Kit ID

Test Kit ID

On-Label Open Platform



Instrument ID

+

Test Kit ID

Lab Developed IVD

Off-Label Mix/Match

Instrument ID

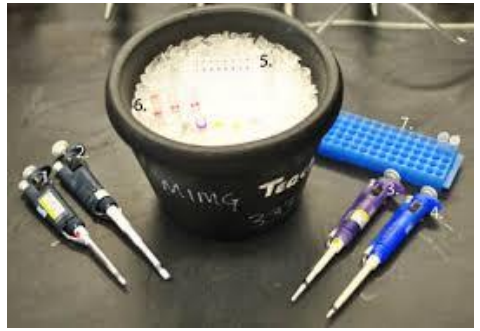
+

Test Kit ID

On-Label Open Platform

Instrument ID

+



Test Kit ID

Specimen

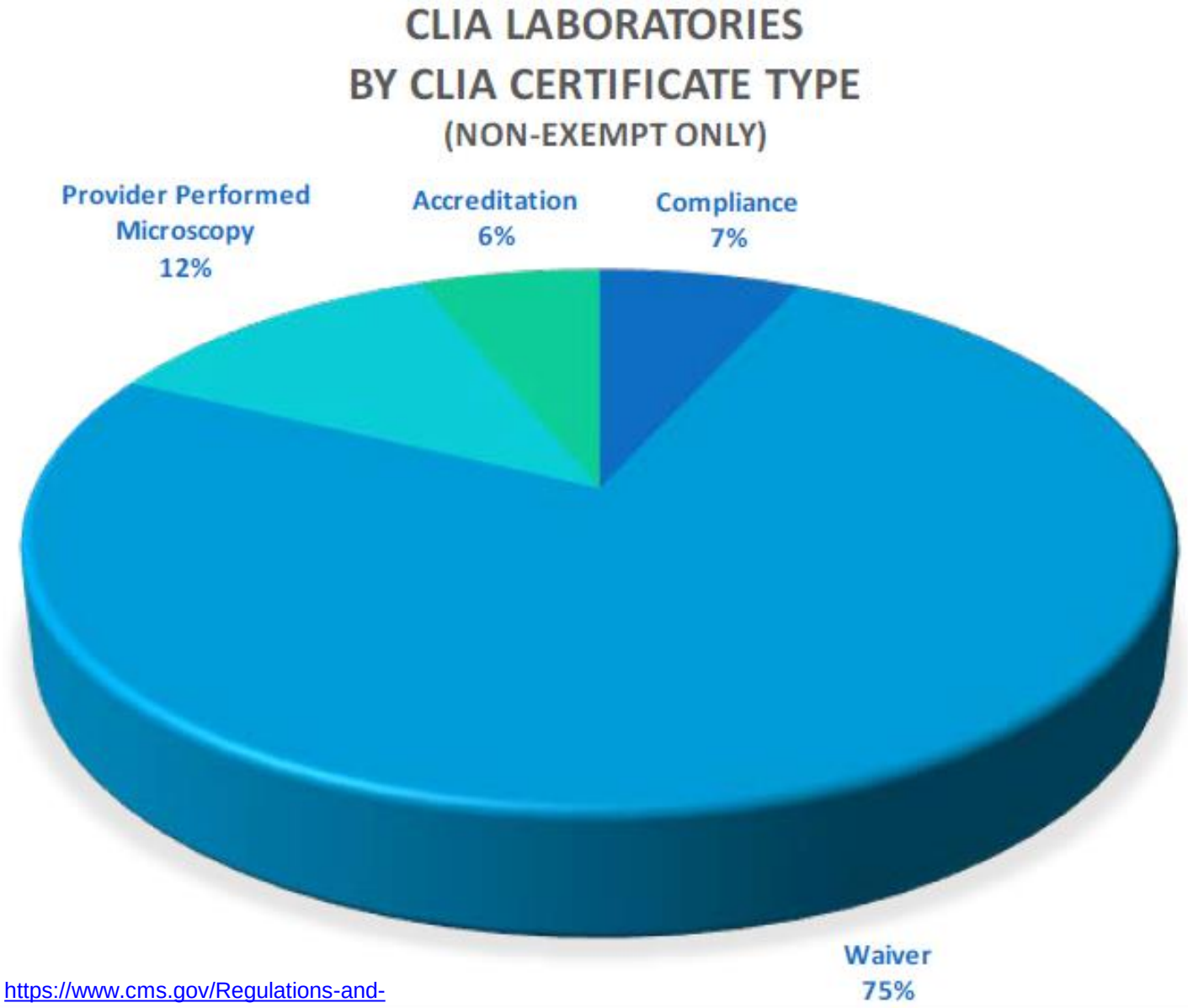
Test Result:
Value Set Performed

Test Order

Device ID

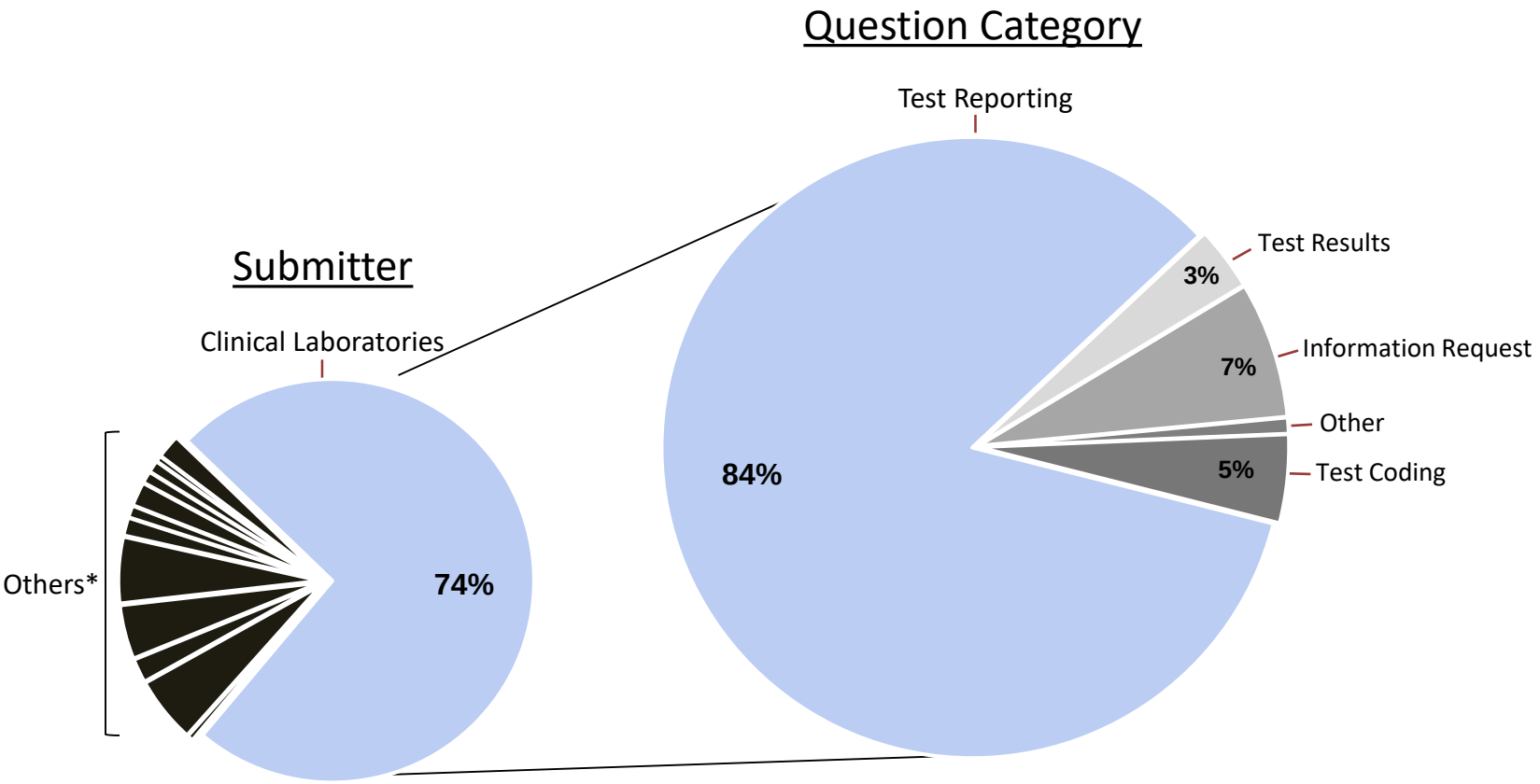
	A	B	C	D	E	F	G	H	M	O
1	**Manufacturer**	**Model**	**Vendor Analyte Name**	**Vendor Specimen Description**	**Vendor Result Description**	**LOINC Code**	**LOINC Long Name**	**LOINC Order Code**	**Testkit Name ID**	Equipment UID
4	Roche	cobas® 6800/8800 Systems	cobas® SARS-CoV-2	nasopharyngeal (NP) swabs (258500001^Nasopharyngeal swab^SCT) oropharyngeal (OP) swabs (258529004^Throat swab^SCT)	SARS-CoV-2 RNA is Detected (260373001^Detected^SCT) SARS-CoV-2 RNA is Presumptive Positive (720735008^Presumptive positive^SCT) SARS-CoV-2 RNA is Not Detected (260415000^Not detected^SCT) Invalid Result (455371000124106^Invalid result^SCT or 125154007^Specimen unsatisfactory for evaluation^SCT)	94500-6	SARS coronavirus 2 RNA [Presence] in Respiratory specimen by NAA with probe detection	94500-6	cobas® SARS-CoV-2_Roche	08430215046203
5	Abbott	ID NOW	COVID-19	nasal swab (445297001^Swab of internal nose^SCT) nasopharyngeal swab (258500001^Nasopharyngeal swab^SCT) throat swabs (258529004^Throat swab^SCT) Nasal and throat swab combination (433801000124107^Nasopharyngeal and oropharyngeal swab^SCT)	Positive (260373001^Detected^SCT) Negative (260415000^Not detected^SCT) Invalid (455371000124106^Invalid result^SCT)	94534-5	SARS coronavirus 2 RdRp gene [Presence] in Respiratory specimen by NAA with probe detection	94534-5	10811877011269	10811877011269
186	BioFire Diagnostics	BioFire Respiratory Panel 2.1 (RP2.1)	Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)	Nasopharyngeal Swab (258500001^Nasopharyngeal swab^SCT)	SARS-CoV-2 Detected (260373001^Detected^SCT) SARS-CoV-2 Not detected (260415000^Not Detected^SCT)	94565-9	SARS-CoV-2 (COVID19) RNA [Presence] in Nasopharynx by NAA with non-probe detection	82159-5	BioFire Respiratory Panel 2.1 (RP2.1)_BioFire Diagnostics, LLC	
187	Mesa Biotech	Accula SARS-Cov-2 Test*	SARS-Cov-2 Interpretation	nasal swab (445297001^Swab of internal nose^SCT)	Positive Test for SARS-CoV-2 (260373001^Detected^SCT) Negative Test for SARS-CoV-2 (260415000^Not detected^SCT) Invalid Result (455371000124106^Invalid result^SCT or 125154007^Specimen unsatisfactory for evaluation^SCT)	95409-9	SARS-CoV-2 (COVID-19) N gene [Presence] in Nose by NAA with probe detection	94531-1	B540COV41000	

Total # Labs = 266,516 (March 2020)



https://www.cms.gov/Regulations-and-Guidance/Legislation/CLIA/Downloads/statcer.pdf

Frequently Asked Questions



Of 239 inquires, the majority came from clinical laboratories regarding how to report test data to local, state, and federal entities

Common questions:

- How to report test data/results?
- How to report to an entity/HHS Protect?
- Clarification at Ask At Order Entry (AOE)

*academic labs, commercial labs, health departments, professional orgs, private sector, etc.

THANK YOU FOR BEING PART OF THE SOLUTION!

Status and Federal Procurement of Testing Supplies

Tammy Beckham
U.S. Department of Health and Human Services (HHS)

FDA Update

Tim Stenzel
U.S. Food and Drug Administration (FDA)

Food and Drug Administration (FDA)

- **COVID-19 Emergency Use Authorization (EUA) Information for Medical Devices**
  https://www.fda.gov/medical-devices/emergency-situations-medical-devices/emergency-use-authorizations
- **COVID-19 In Vitro Diagnostic EUAs**
  https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/vitro-diagnostics-euas
- **COVID-19 Frequently Asked Questions**
  https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/coronavirus-disease-2019-covid-19-frequently-asked-questions
- **COVID-19 Updates**
  https://www.fda.gov/emergency-preparedness-and-response/mcm-legal-regulatory-and-policy-framework/emergency-use-authorization#2019-ncov
- **FDA Townhall Meetings**
  https://www.fda.gov/medical-devices/workshops-conferences-medical-devices/virtual-town-hall-series-immediately-effect-guidance-coronavirus-covid-19-diagnostic-tests-06032020
- **Independent Evaluations of COVID-19 Serological Tests**
  https://open.fda.gov/apis/device/covid19serology/

FDA U.S. FOOD & DRUG ADMINISTRATION

Food and Drug Administration (FDA)

COVID-19 Diagnostic Development: CDRH-EUA-Templates@fda.hhs.gov

Spot Shortages of Testing Supplies: 24-Hour Support Available

1. Call 1-888-INFO-FDA (1-888-463-6332)
2. Then press star (*)

U.S. FOOD & DRUG ADMINISTRATION

CDC Social Media

https://www.facebook.com/CDC

https://twitter.com/cdcgov

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

Thank You For Your Time!

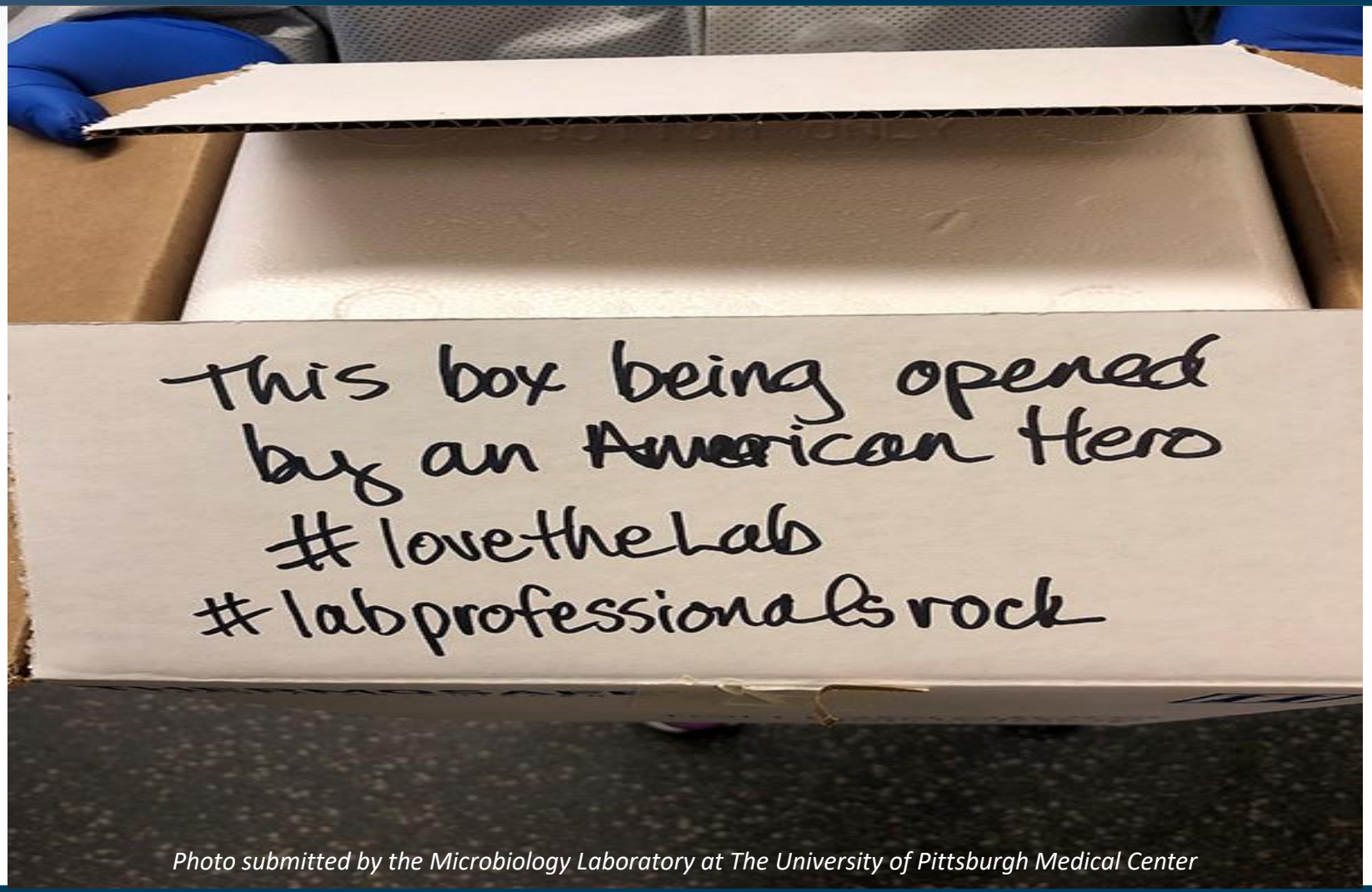


Photo submitted by the Microbiology Laboratory at The University of Pittsburgh Medical Center