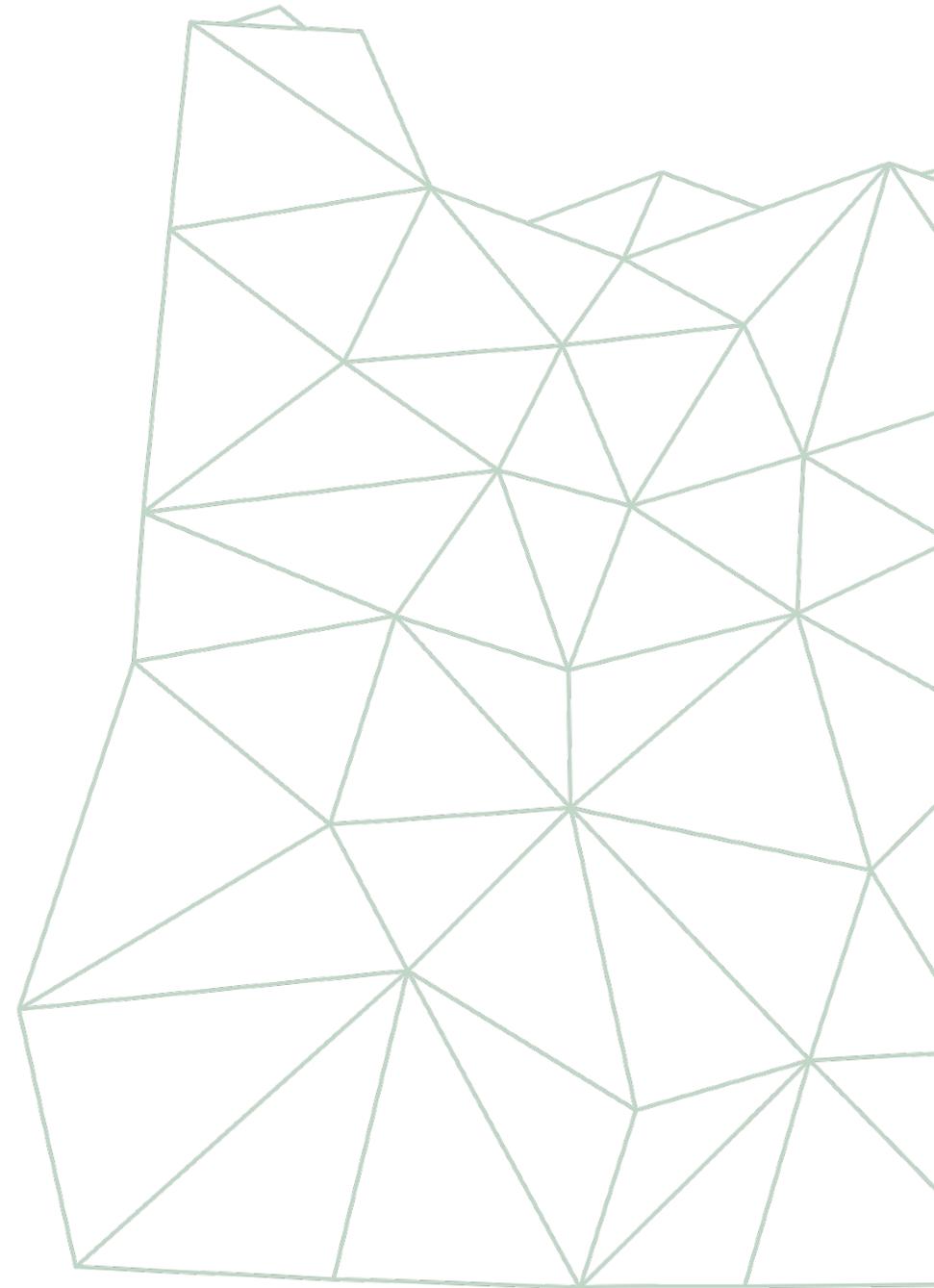




SPECIAL Part 2

**COVID-19 Response ECHO for
Oregon Clinicians**

Session 6 August 27, 2020



Housekeeping

- We have added sessions to this ECHO.
 - Originally scheduled to wrap-up on September 24, the ECHO program will now end on December 10. The remaining sessions in 2020 will occur on :
 - August 27
 - September 10
 - September 24
 - October 8
 - October 22
 - November 12
 - December 10
 - **Please update your calendars**
- For the most up-to-date information on CME and Maintenance of Certification credits, please go to the ECHO connect portal at www.oregonechonetwork.org.

Housekeeping

- Everyone is muted
- Use the Chat Box to submit questions/comments/share links & resources
 - We will strive to select questions directly relevant to the presentations for asking during the session, but will not be able to address all questions
 - Questions not directly answered will be collated and used in the planning of future sessions
- All sessions will be recorded and available for viewing after the session within 24 hours
- Resources and transcript of today's chat box, PowerPoint slides, and video recording will be posted on our ECHO Network website at www.connect.oregonechonetwork.org (where you registered)
- PLEASE fill out the post-session survey that you'll receive by email today

Part 2 COVID-19 ECHO Series Goals

- 1) Share the latest information on COVID-19 impact in Oregon and amplify the public health response;
- 2) Provide guidance on evidence-based management of COVID-19 and its clinical, behavioral & care delivery consequences;
- 3) Create a forum to share clinical, community, and system cases to improve quality and inform 'best practice'

COVID-19 ECHO Part 2 Expert Presentation Topics

- Covid-19 Clinical Course and Prognostic Factors
- Social determinants of SARS-CoV2 infection and suboptimal outcomes in vulnerable populations
- Catching Up and Keeping Up on Routine Immunizations as COVID-19 Continues
- Proactive outreach for high risk populations/population-based care in the time of COVID
- **Today's Session: COVID-19 Diagnostics-** Ellie Sukerman MD, OHSU
Infectious Disease
- **September 10: Vaccine Development Update-** Mark Slifka
PhD, Virologist, OHSU

Today's Agenda

- COVID-19 Update:
 - Oregon Health Authority
- Expert presentation: “Covid-19 Testing Updates” - Ellie Sukerman MD, OHSU Infectious Disease
- Community Presentation: “Case Investigation and Contact Tracing” – David Cuevas, Disease Intervention Specialist, Multnomah County
- Q & A

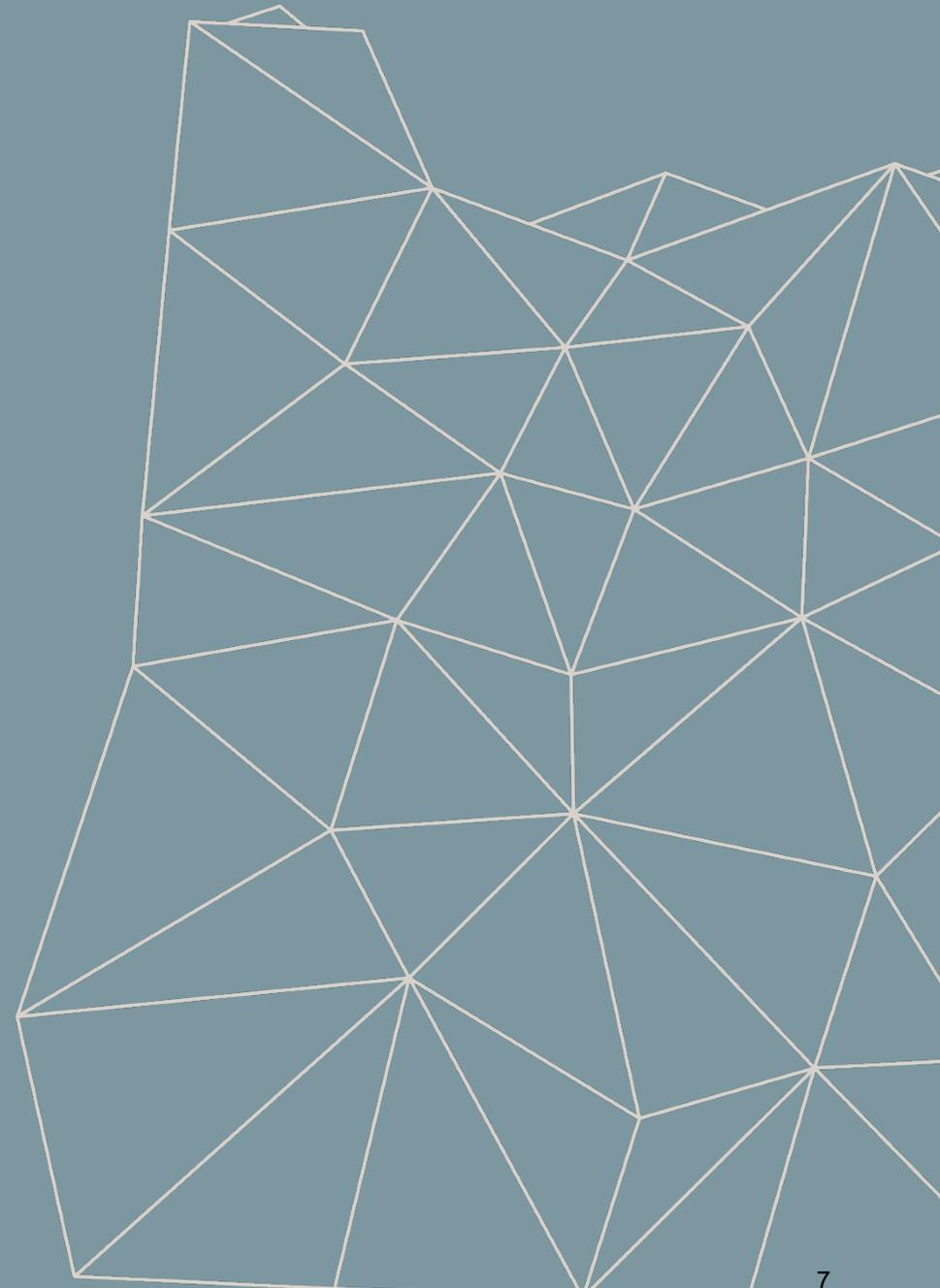


Oregon Health Authority

COVID-19 Update, August 27, 2020

Dana Hargunani, MD, MPH

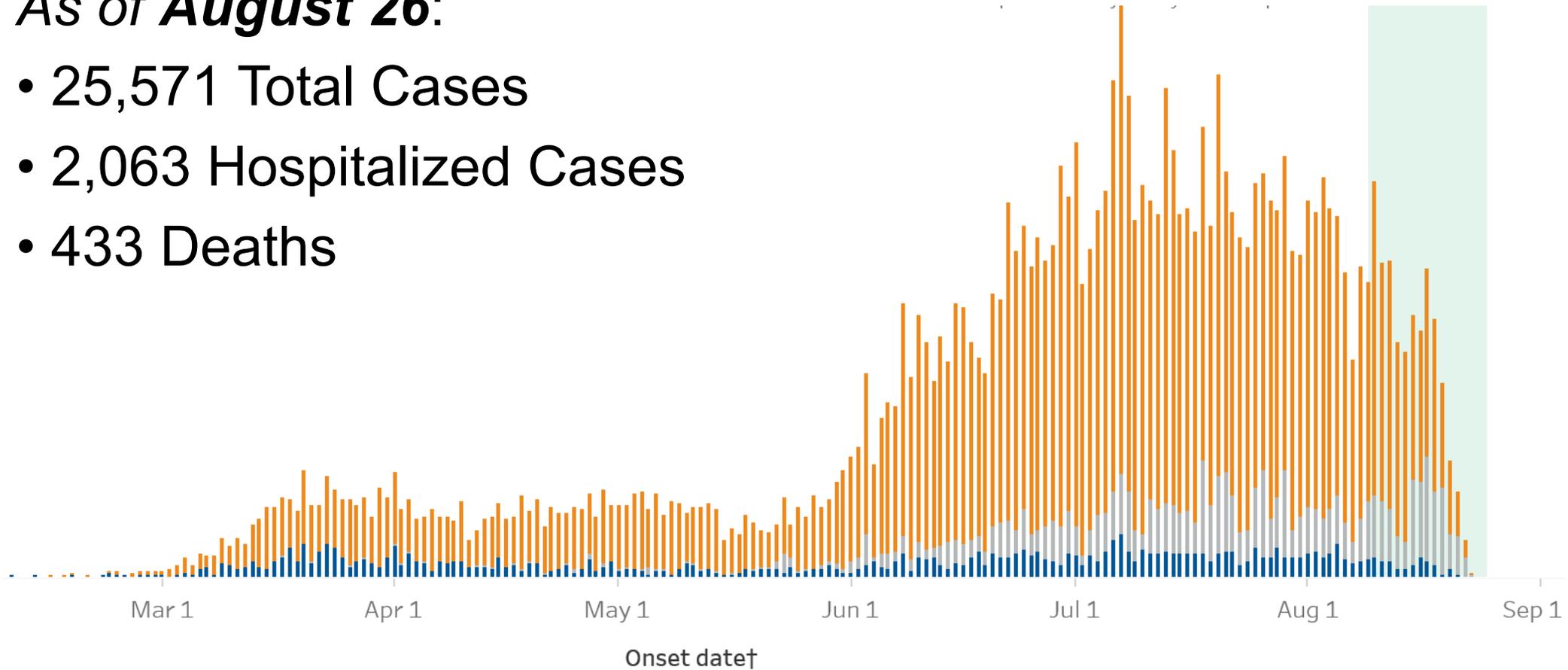
Tom Jeanne, MD, MPH



The COVID-19 Pandemic Update in Oregon

As of August 26:

- 25,571 Total Cases
- 2,063 Hospitalized Cases
- 433 Deaths



The COVID-19 Pandemic Update in Oregon

*For the week of **August 16-22***:*

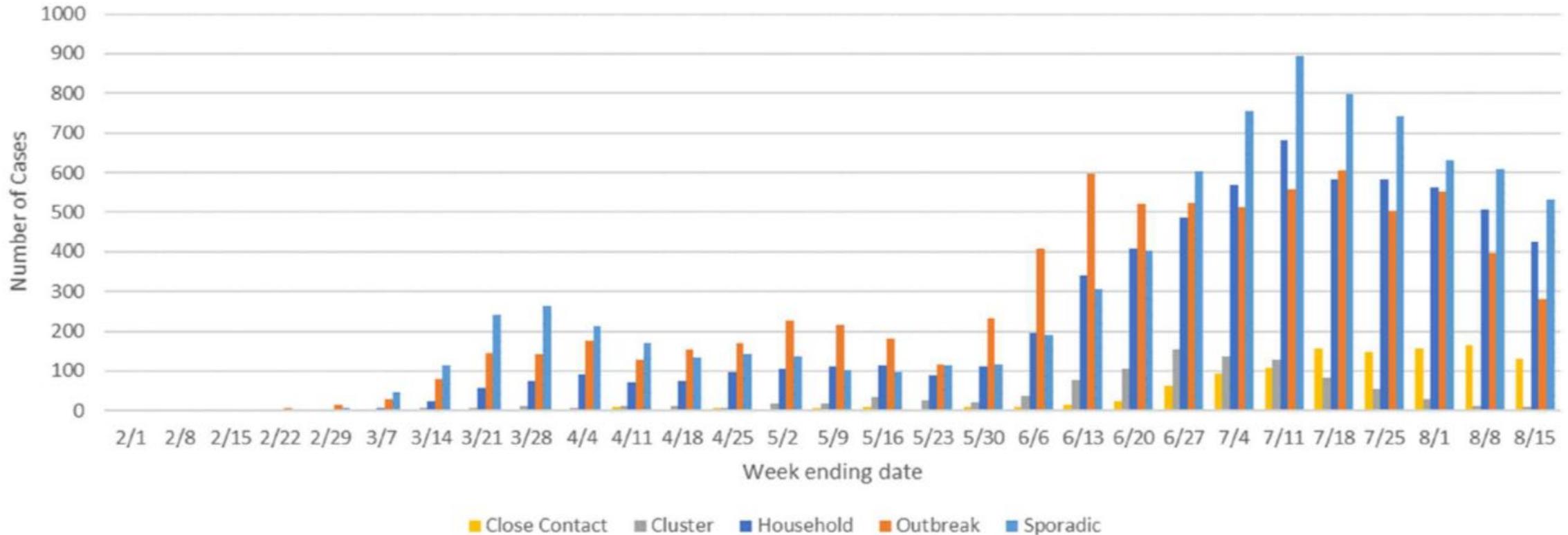
- 22,944 tests completed
- Of specimens collected, 5.1% were positive
- 1,233 new cases

**Numbers will change as additional test results from specimens collected during the time period are reported*

	7/4	7/11	7/18	7/25	8/1	8/8	8/15	8/22	Total to date
Positive	1777	2297	2194	2048	2010	1810	1720	1233	22234
Negative	32424	37935	38706	33843	30390	32819	31289	22944	467761
Total results	34201	40232	40900	35891	32400	34629	33009	24177	489995
% Positive	5.2	5.7	5.4	5.7	6.2	5.2	5.2	5.1	4.5

Epidemiologic Link of COVID-19 Cases: sporadic cases still leading

Figure 1. Epidemiologic link of COVID-19 cases by week of onset



Latest Epidemic Projections – Oregon

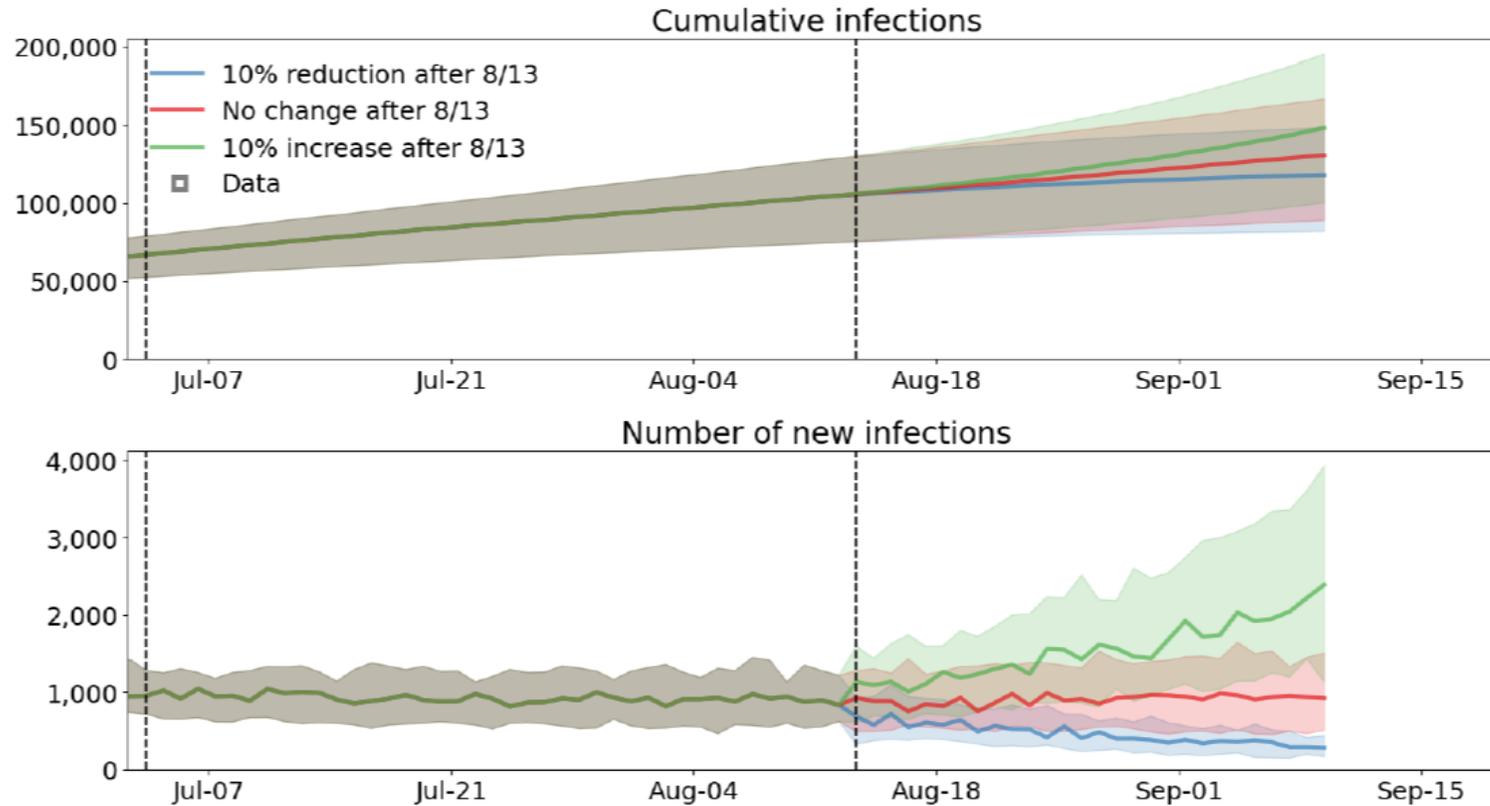


Figure 2: Model projections for the next 4 weeks, assuming that after August 13: 1) transmission does not change (red line), 2) transmission decreases by 10 percentage points (blue line), and 3) transmission increases by 10 percentage points (green line). The lighter shaded areas correspond to 80% forecast intervals (i.e., 10th and 90th percentiles of the projection).

Latest Epidemic Projections – Oregon

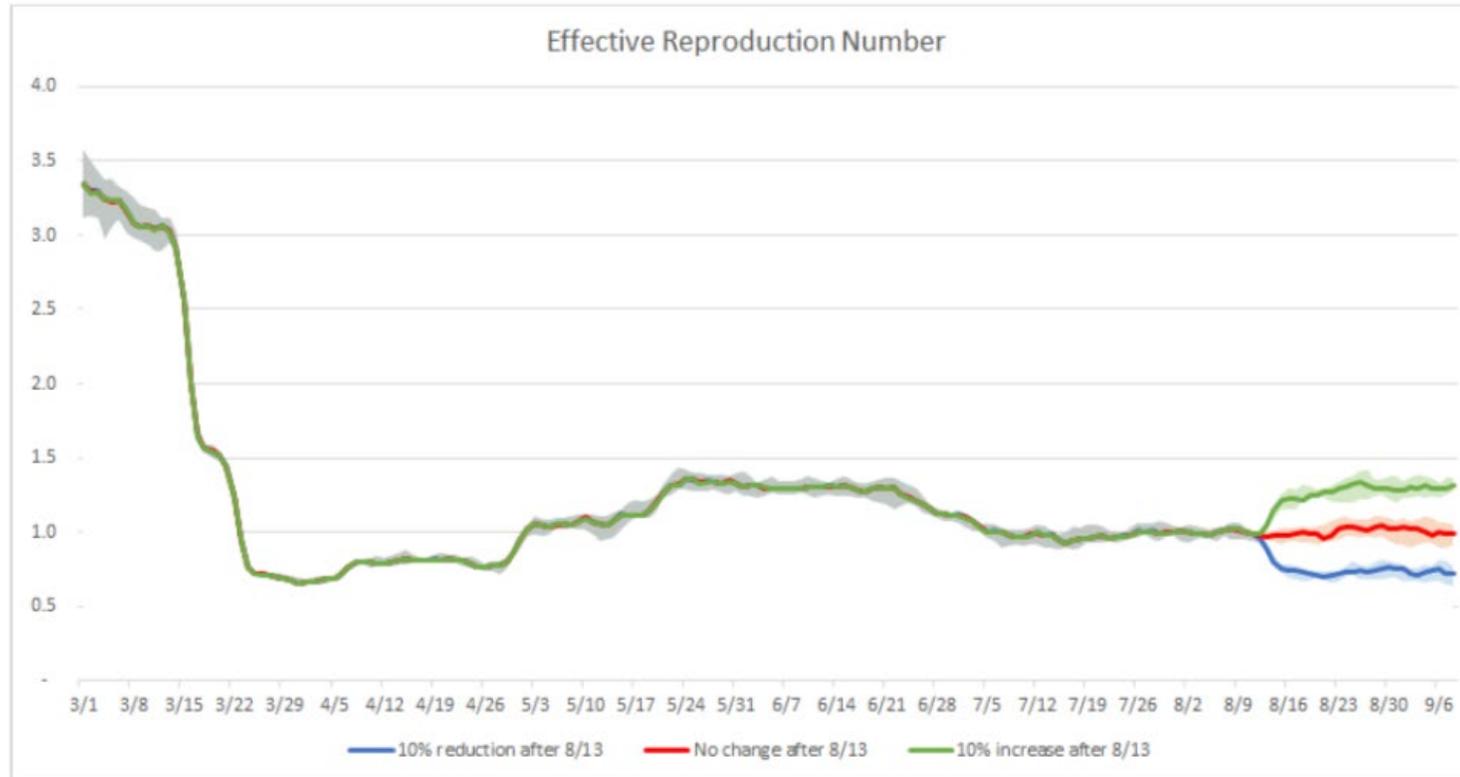


Figure 3: Projected effective reproduction number (R_e) through September 8, assuming that starting August 14: 1) no change in transmission (red line), 2) transmission decreased by 10 percentage points (blue line), and 3) transmission increased by 10 percentage points (green line). The lighter shaded areas correspond to 80% forecast intervals (i.e., 10th and 90th percentiles of the projection). R_e is the expected number of secondary cases that a single case generates.

School Readiness Metrics

Required for return to in-person instruction, or a hybrid model of onsite and online learning:

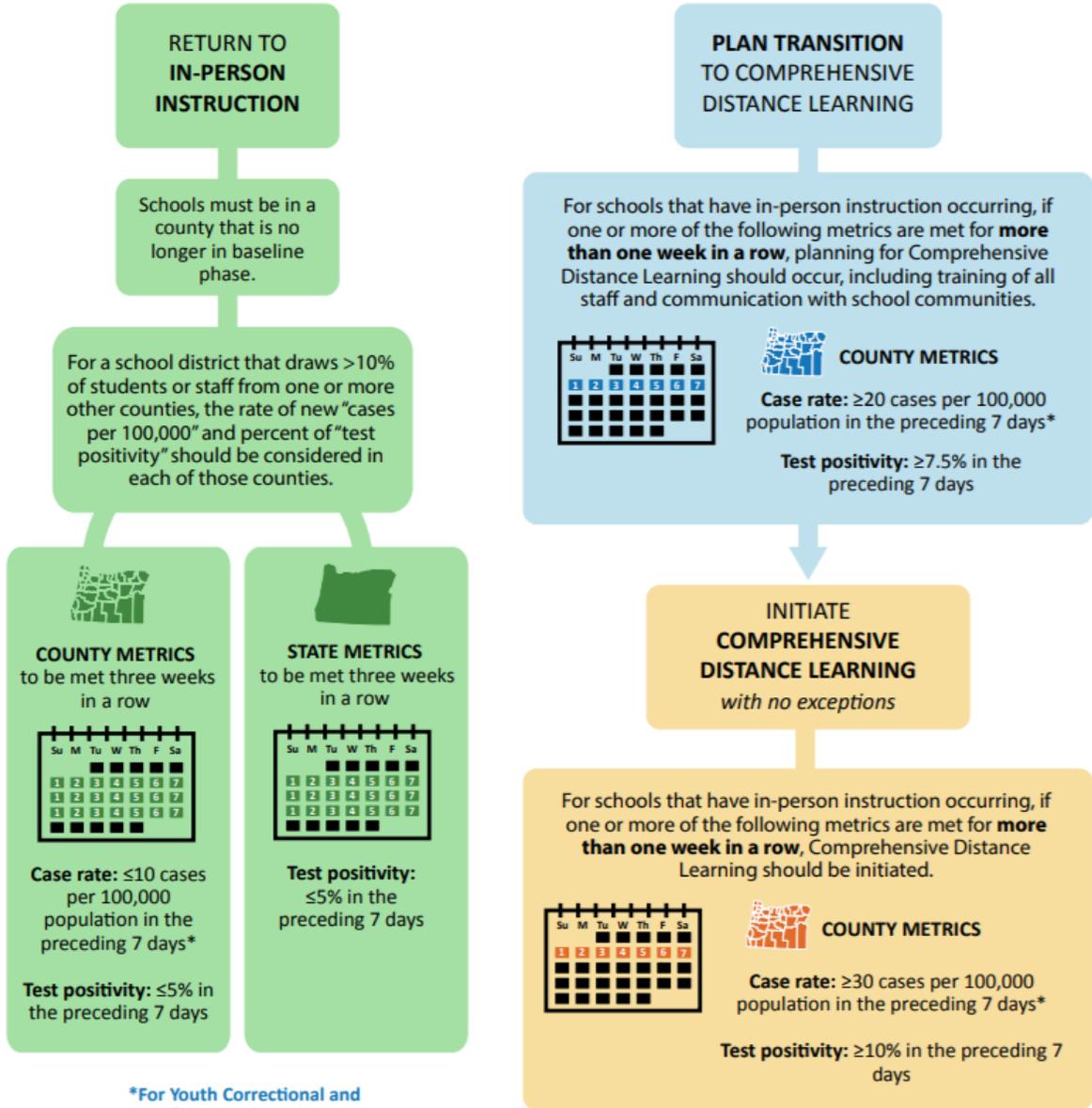
State level

COVID-19 test positivity $\leq 5\%$ in the preceding 7 days for 3 weeks in a row

County level

≤ 10 COVID-19 cases per 100,000 population in the preceding 7 days

COVID-19 test positivity $\leq 5\%$ in the preceding 7 days for 3 weeks in a row



www.oregon.gov/ode/
Planning for 2020–21 School Year > Metrics Explainer

*For Youth Correctional and Juvenile Detention Programs:

School Readiness Metrics

www.healthoregon.org/coronavirus

School Health and Safety Metrics

County	Week Start Date	Case Count	Case rate per 100,000	Test Positivity (%)
Oregon, statewide	7/5/2020	1,944	46	5.7%
	7/12/2020	2,405	57	5.4%
	7/19/2020	2,179	51	5.7%
	7/26/2020	2,330	55	6.2%
	8/2/2020	2,182	52	5.2%
	8/9/2020	2,003	47	5.2%
	8/16/2020	1,698	40	5.1%
Baker	7/5/2020	7	42	2.7%
	7/12/2020	1	6	7.0%
	7/19/2020	9	54	5.6%
	7/26/2020	8	48	6.2%
	8/2/2020	8	48	3.1%
	8/9/2020	15	89	7.3%
	8/16/2020	11	65	20.0%

School Readiness Metrics

www.oregon.gov/ode/

Planning for 2020–21 School Year > School Metrics Dashboard



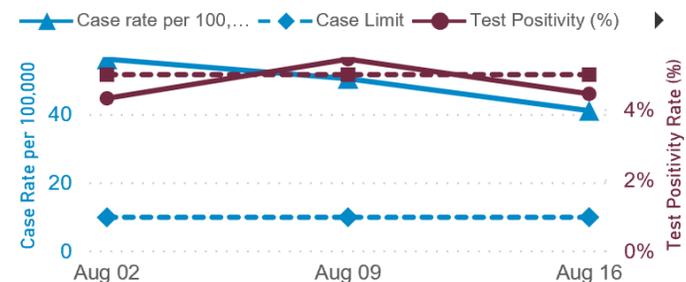
Click to Select County:

Multnomah

County / State	Date	Test Positivity (%)	Case rate per 100,000	Case Count
Oregon	August 2	5.2%	51.51	2182
Oregon	August 9	5.2%	47.28	2003
Oregon	August 16	5.1%	40.08	1698

County / State	Date	Test Positivity (%)	Case rate per 100,000	Case Count
Multnomah	August 2	4.3%	56.34	463
Multnomah	August 9	5.4%	50.62	416
Multnomah	August 16	4.5%	41.25	339

Solid line should be below matching dotted line.



Criteria for In-Person Instruction (1)

County and State meet the Standard to open In-Person Instruction



If in-person, plan to transition to Comprehensive Distance Learning



Required to initiate Comprehensive Distance Learning



Statewide Exceptions for In-Person (2)

Allowance for limited in-person instruction for specific groups of students



If 10-30 cases per 100,000 population: In-person education for K-3rd grade



Districts with enrollment of <= 75 in total: In-person education for Small Schools



County Allowances for In-Person (3)

Larger population counties (> 30,000 and > 6 people / square mile)



Smaller population counties (<= 30,000 people)



Low population-density counties (< 6 people / square mile)



Notes:

A **green check** in this column indicates these conditions may apply to the selected county IF additional criteria are met (see link below). (1)(2)(3)

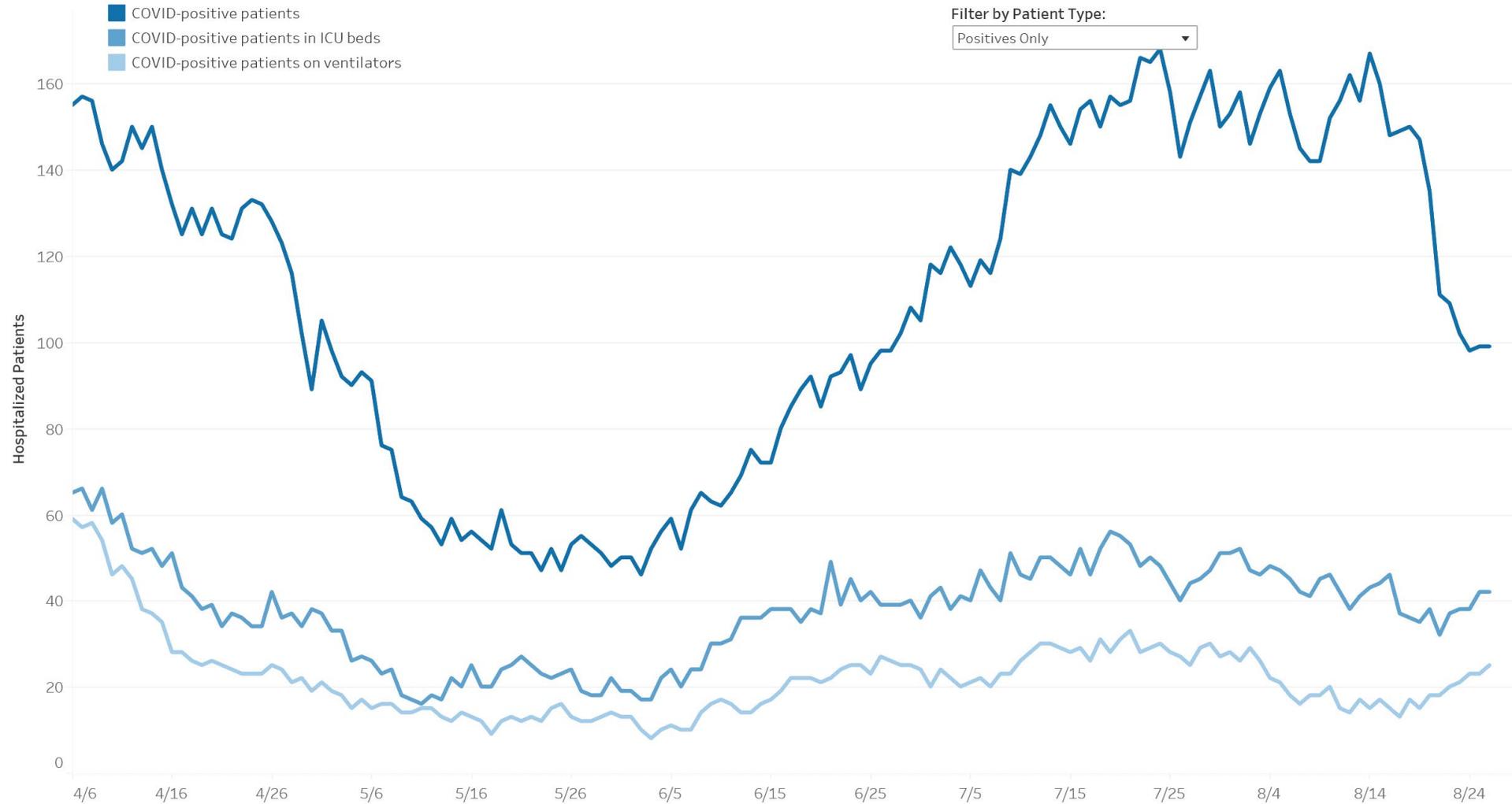
A **red X** indicates the condition does not apply to this county. (1)(2)(3)

A **yellow exclamation point** indicates the condition applies but data may be negatively trending in the last week. (1)

A **grey circle** indicates the condition does not apply to the selected county (3), this condition is not available to the selected county because of the status of another condition (2), or the data for this county fall between criteria for conditions (1).

Additional criteria in ODE's Following the Metrics guide can be found at: <https://www.oregon.gov/ode/students-and-family/healthsafety/Documents/Following%20the%20Metrics%20Visual.pdf>

COVID-19 Hospitalized Patients- Census Trends by Acuity



News

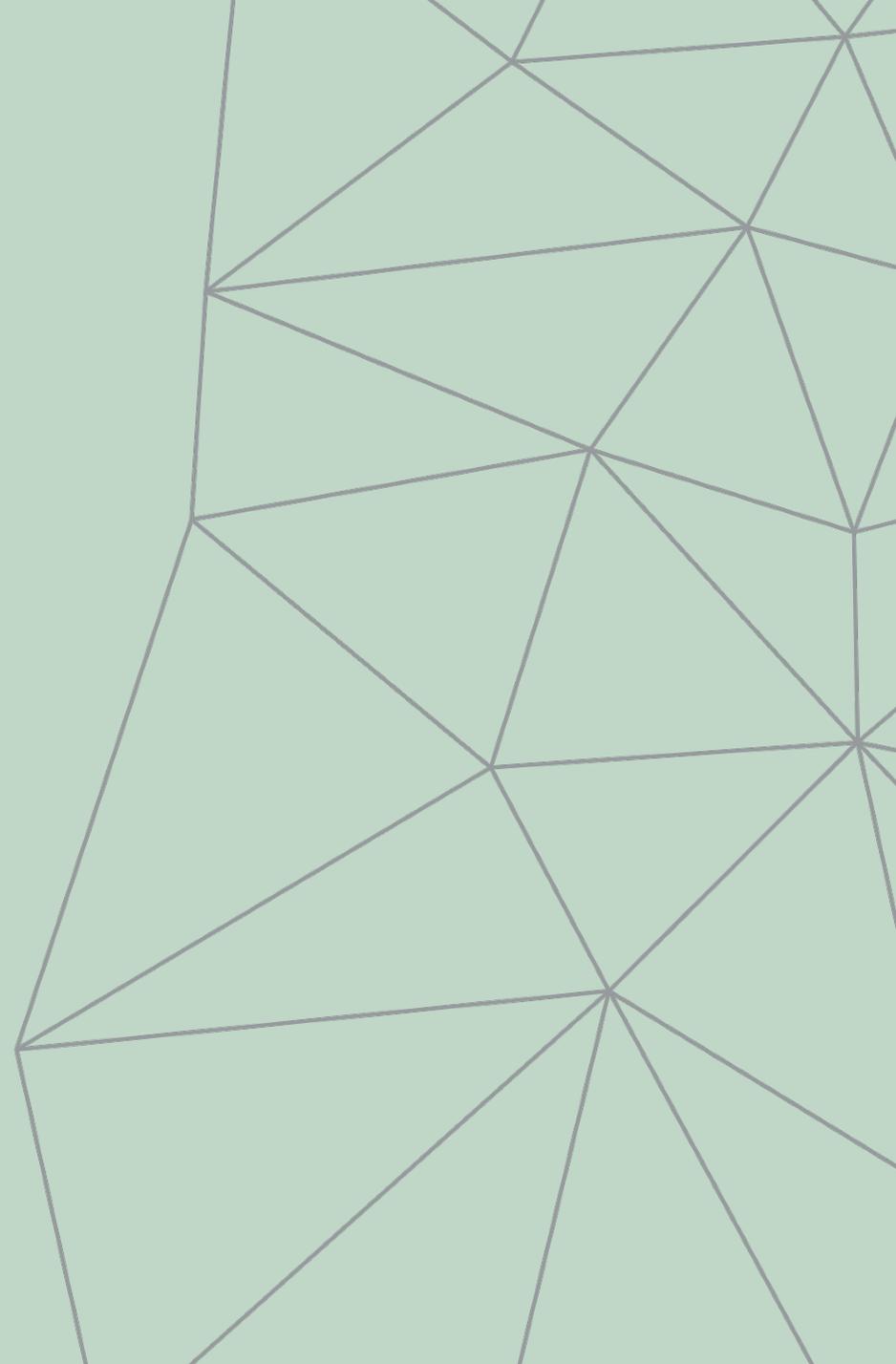
CDC

- Interim Guidance for Rapid Antigen Testing for SARS-CoV-2
<https://www.cdc.gov/coronavirus/2019-ncov/lab/resources/antigen-tests-guidelines.html>
- Criteria for Return to Work for Healthcare Personnel with SARS-CoV-2 Infection (Interim Guidance), updated
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/return-to-work.html>

OHA

- Seroprevalence Estimates of SARS-CoV-2 Infection in Convenience Sample – Oregon
[http://dx.doi.org/10.15585/mmwr.mm6932a4external icon](http://dx.doi.org/10.15585/mmwr.mm6932a4external%20icon)
- Health Equity Grants to support communities hardest hit by COVID-19
<https://www.oregon.gov/oha/covid19/Pages/equity-grants-covid-19.aspx>

Questions





COVID Testing Updates

August 27, 2020 Ellie Sukerman, MD

Outline

- Diagnostic vs. screening testing
- Testing technologies, performance & availability
 - PCR, antigen, antibody

Diagnostic vs. Screening Testing

- **Diagnostic**
 - To identify current infection in those with signs/sxs consistent with COVID-19 *OR*
 - Asymptomatic but with known or suspected exposure
- **Screening**
 - Intended to identify infected, asymptomatic cases without known or suspected exposure

Testing Technologies

	Molecular Tests	Antigen Tests	Antibody Tests
Also referred to as:	<ul style="list-style-type: none"> • Diagnostic tests • Viral tests • Nucleic acid amplification (NAAT) • RT-PCR • LAMP 	<ul style="list-style-type: none"> • Rapid diagnostic test • Note, some molecular tests are also rapid tests 	<ul style="list-style-type: none"> • Serology testing
Site of collection	<ul style="list-style-type: none"> • NP, nasal or throat swab (most cases) • Saliva 	<ul style="list-style-type: none"> • Nasal or throat swab 	<ul style="list-style-type: none"> • Finger stick or blood draw
Time to results	<ul style="list-style-type: none"> • Varies <ul style="list-style-type: none"> • 1h for rapid tests • Same day or up to 1 week+ 	<ul style="list-style-type: none"> • 1h or less 	<ul style="list-style-type: none"> • Same day up to ~3d

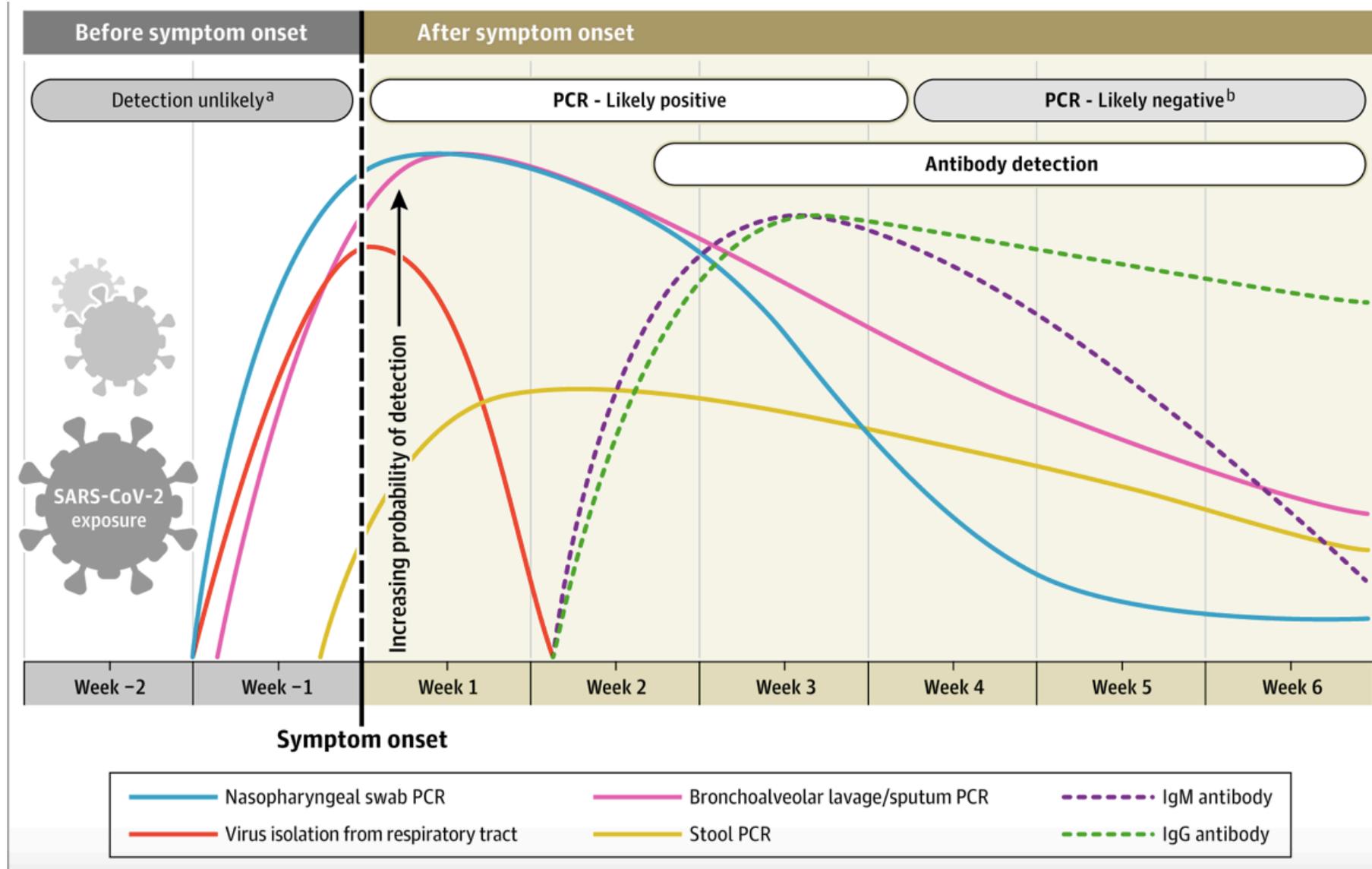
NAAT Testing

- Sn likely 70-98% -> false negatives up to ~30%
- Factors affecting false negative rate include timing of sample collection and quality of sampling
- Sp high (~98-99%)

Testing Interpretation

- Take into account test characteristics and pre-test probability
- A "positive" PCR test has more weight than a negative test due to the test's high Sp but moderate Sn
- If high clinical suspicion for COVID-19 but the initial test is negative
-> repeat testing

Timing of Testing



Site of Sampling

Table. Detection Results of Clinical Specimens by Real-Time Reverse Transcriptase–Polymerase Chain Reaction

Specimens and values	Bronchoalveolar lavage fluid (n = 15)	Fibrobronchoscope brush biopsy (n = 13)	Sputum (n = 104)	Nasal swabs (n = 8)	Pharyngeal swabs (n = 398)	Feces (n = 153)	Blood (n = 307)	Urine (n = 72)
Positive test result, No. (%)	14 (93)	6 (46)	75 (72)	5 (63)	126 (32)	44 (29)	3 (1)	0
Cycle threshold, mean (SD)	31.1 (3.0)	33.8 (3.9)	31.1 (5.2)	24.3 (8.6)	32.1 (4.2)	31.4 (5.1)	34.6 (0.7)	ND
Range	26.4-36.2	26.9-36.8	18.4-38.8	16.9-38.4	20.8-38.6	22.3-38.4	34.1-35.4	
95% CI	28.9-33.2	29.8-37.9	29.3-33.0	13.7-35.0	31.2-33.1	29.4-33.5	0.0-36.4	

Abbreviation: ND, no data.

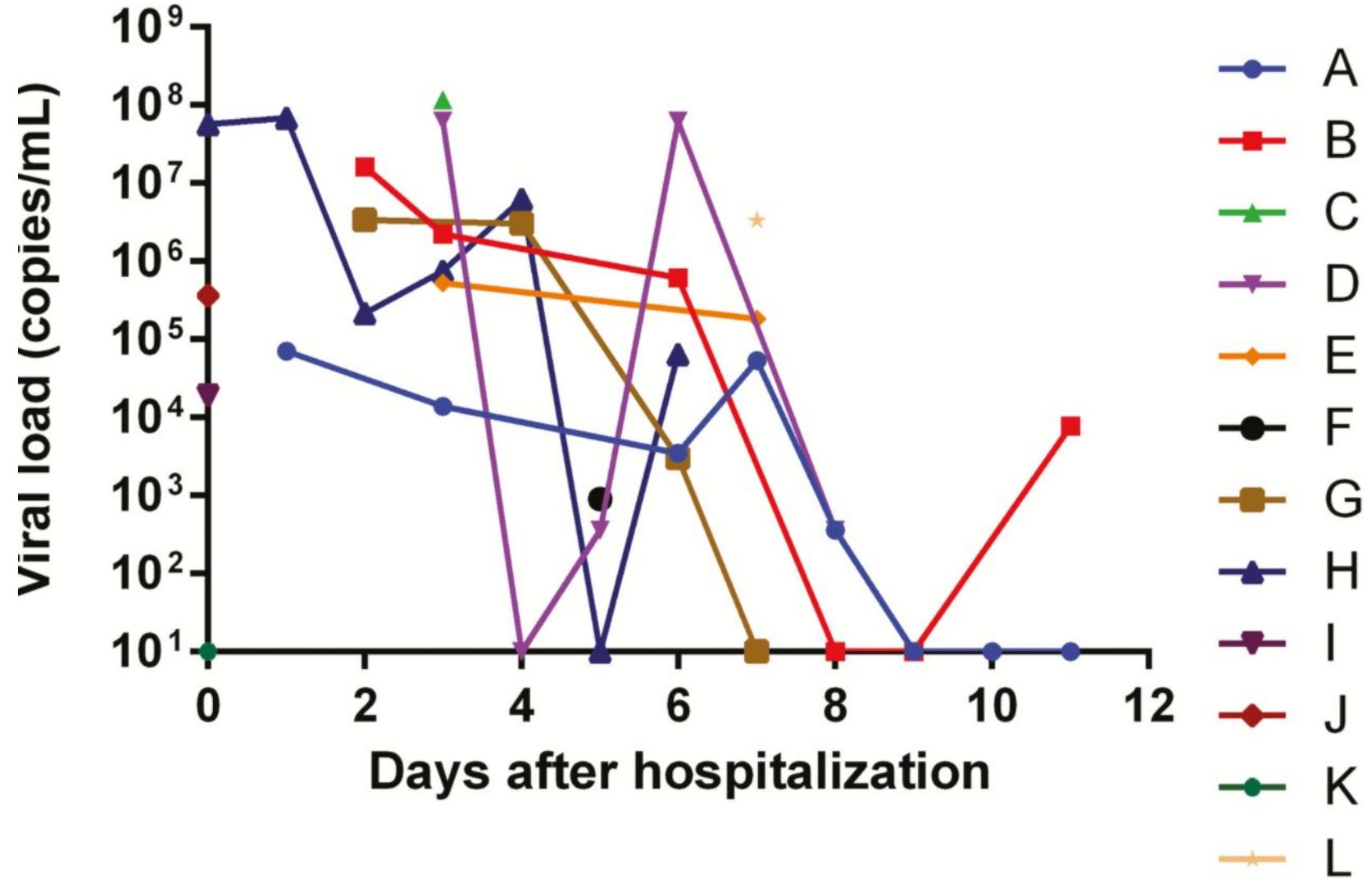
NP vs. Nasal Swab

Comparison of nasopharyngeal versus nasal sampling for SARS-CoV-2 detection by molecular biology

Nasopharyngeal sample/nasal sample results	No. of samples (%)
Concordant results	
Positive/positive	33 (75.0)
Negative/negative	7 (15.9)
Discordant results	
Positive/negative ^a	4 (9.1)
Total	44 (100.0)

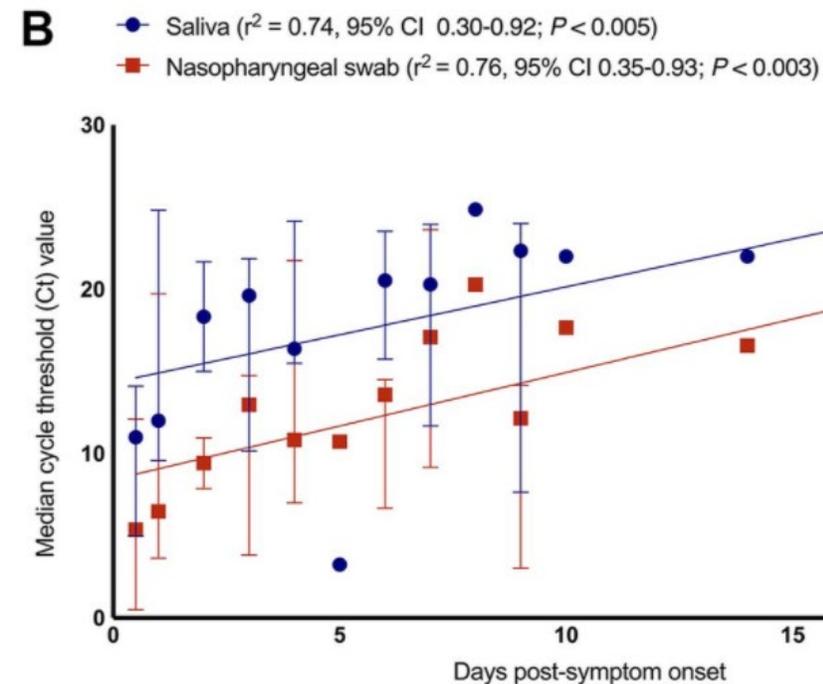
^a Of the four samples with discordant results, two samples had very low viral loads (C_T of 38 on the *N* gene).

Saliva Testing



NP Swab vs. Saliva

- 622 patients
 - All had NP PCR
 - 522 had saliva PCR
 - 39 pts had +NP PCR
 - 33/39 (84.6%) also had +saliva



Pros vs. Cons of Nasal Swab or Saliva

- Decreased Sn compared to NP swabs
- May be a good alternative in face of limited resources (swabs, personnel), decreased discomfort

The persistent positive PCR problem

- Test-based strategy for discontinuation of transmission-based precautions or isolation no longer recommended
- Resulted in prolonged isolation or delayed return to work for those who continue to shed virus but are no longer infectious

Antigen Tests

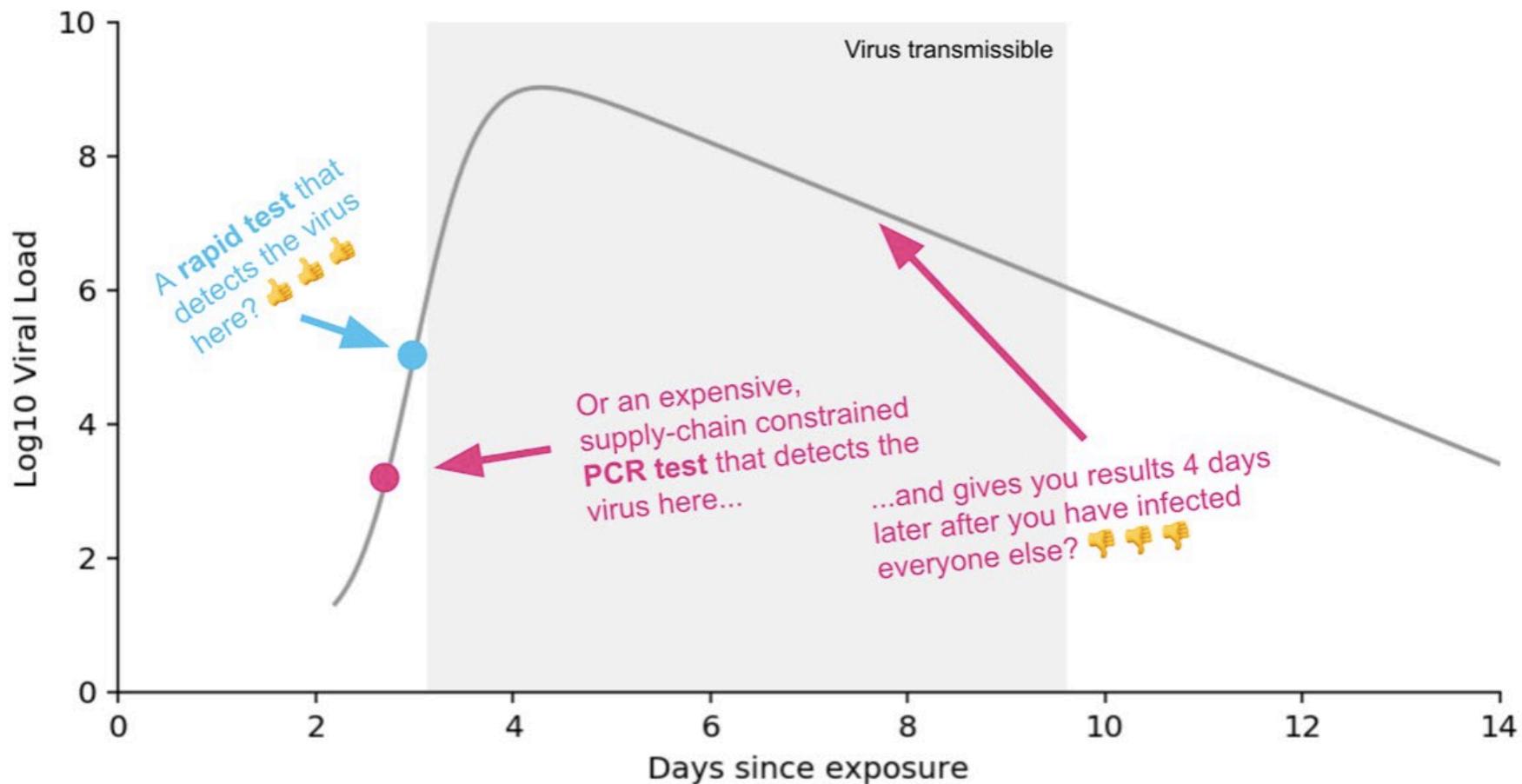
- **Pros:** inexpensive, rapid results
- **Cons:** less sensitive than PCR (~84-97%) so needs to be interpreted in clinical context
- Performed on nasal or NP specimens

Potential Role of Antigen Tests

- Diagnostic testing
 - Early in course of infection when viral loads high and people are most infectious
 - Persons with known exposure
- Screening testing
 - High-risk congregate settings where repeat testing could quickly identify infection leading to rapid infection prevention and control intervention

Rapid Tests vs PCR

Which type of test is better for routine monitoring?



Viral load estimates and test sensitivities from Larremore, 2020
<https://www.medrxiv.org/content/10.1101/2020.06.22.20136309v2.full.pdf>

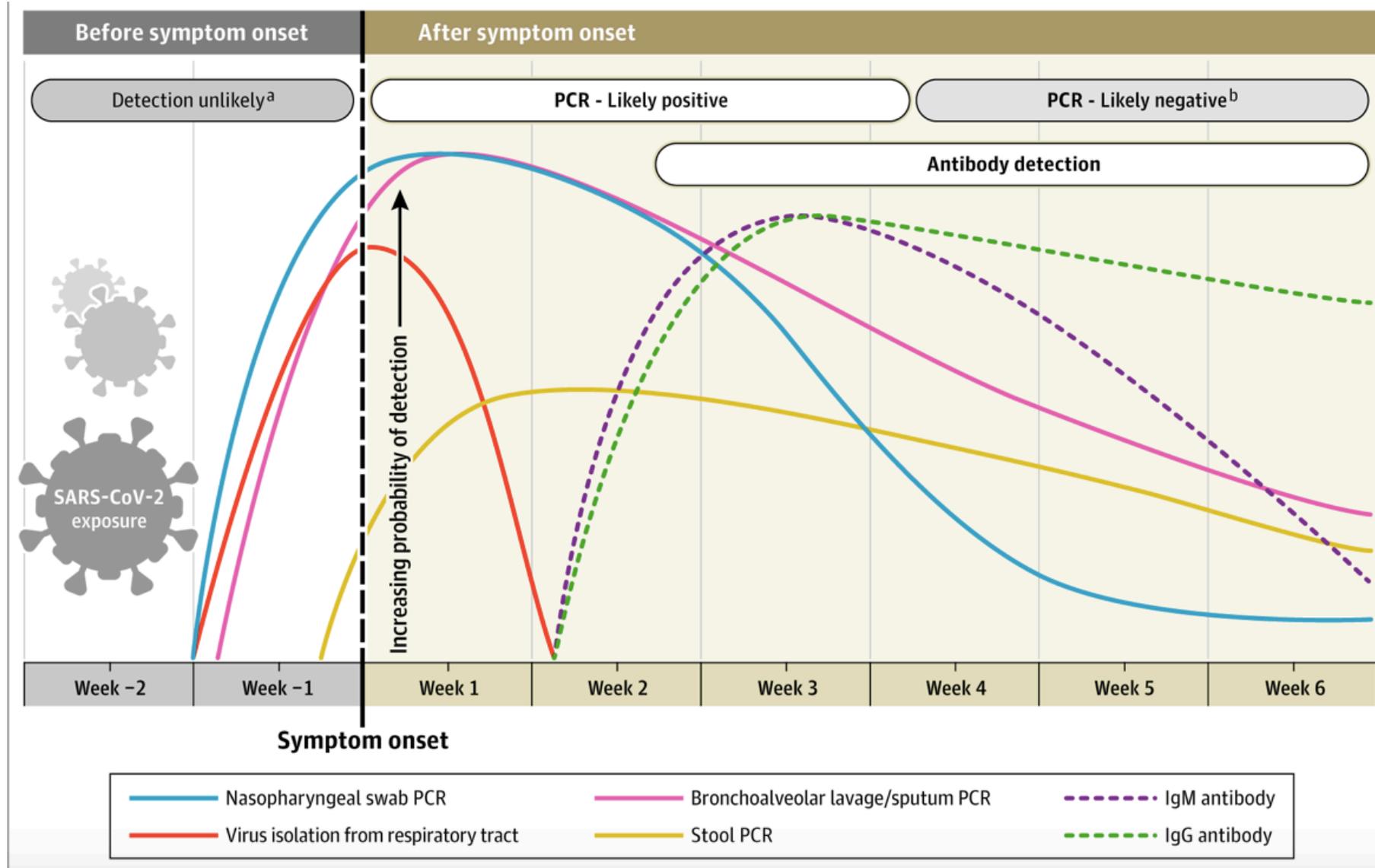
Availability of Rapid Antigen Tests

- 3 assays with FDA EUA approval as of 8/25/20
- Use of these tests for diagnostic or screening testing requires FDA EUA

Antibody (Ab) Testing

- Not recommended for dx or exclusion of infection
- Should not be used to determine immunity or inform decisions to discontinue physical distancing or PPE

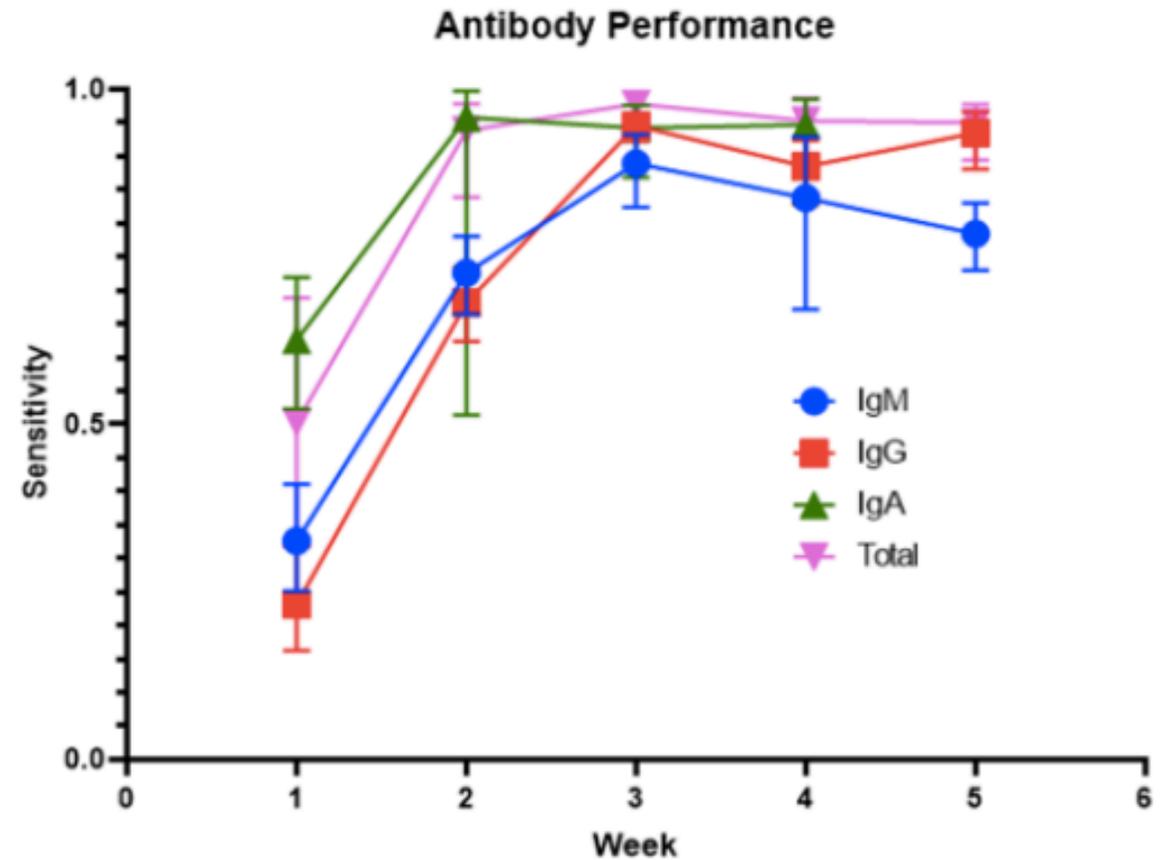
Ab Testing



Timing of Ab Testing

- Consider IgG testing if high clinical suspicion with repeatedly negative PCR results
- Best sensitivity at 3-4 weeks after sx onset

Figure 1. Antibody Sensitivity over Time



IDSA Ab Testing Guidelines

- For pediatric pts with multisystem inflammatory syndrome, suggest using IgG and PCR to provide evidence of current or past COVID-19 infection
- Suggest against IgG/IgM combination tests to detect evidence of past infection
 - Reactive IgM alone would be considered positive

Ab Test Performance

- False positives possible, PPV ranging 50-100%*
 - With low seroprevalence, PPV decreases so a false positive may be more likely than a true positive
- False negatives may occur if testing is performed early in illness

*assumes 5% seroprevalence

Availability of Ab Tests

- Increasingly available
 - 39 assays have FDA EUA as of 8/25/20
- Variety of technologies, IgG vs. IgM vs. combo, and targets (spike protein, nucleocapsid, combo)

Take-Away

- PCR testing sensitivity is not perfect so keep clinical context/pre-test probability in mind
- Molecular testing by NP swab is current mainstay for diagnostic testing but alternative sites of collection (nasal swab, saliva) may be useful
- Antigen testing less sensitive than PCR but cheap, fast and may be critical to increasing testing and decreasing transmission in certain settings
- Antibody testing increasingly available; should not be used as sole test for dx or to exclude infection; consider in MSIS or possibly as adjunct to PCR testing



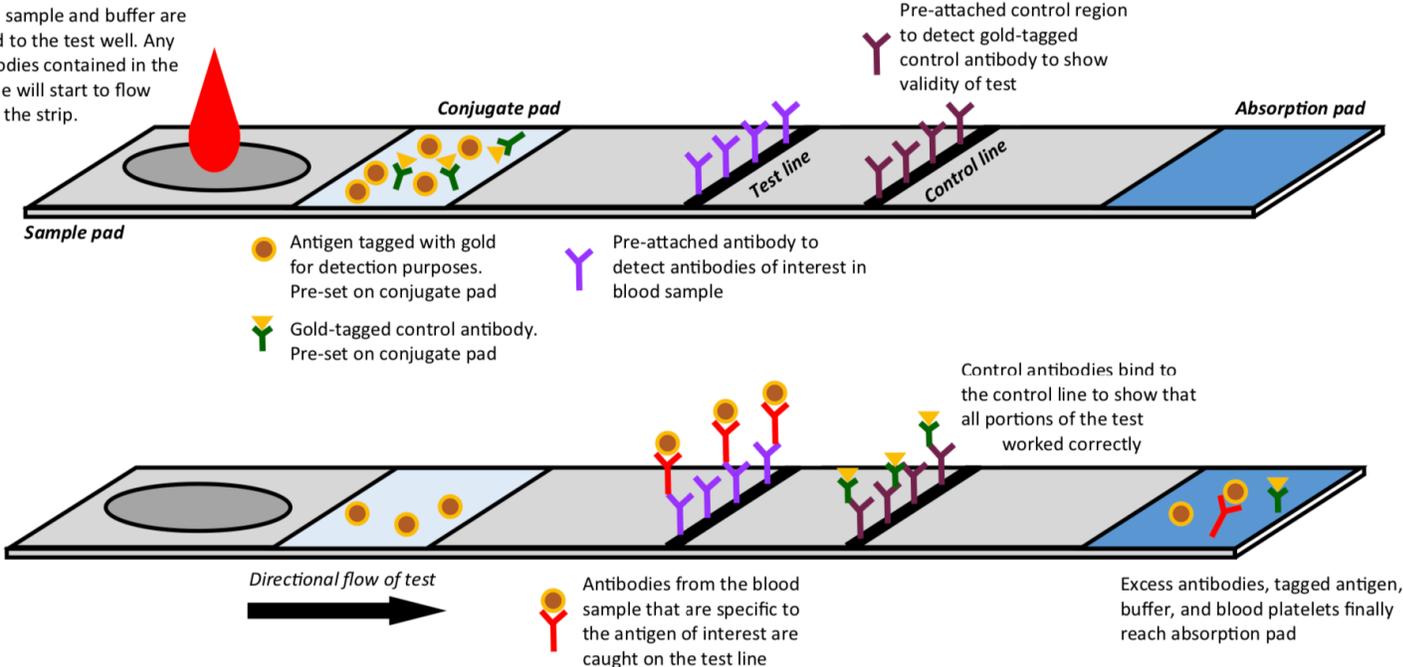
Thank You

All Antibody Tests are Not Equal

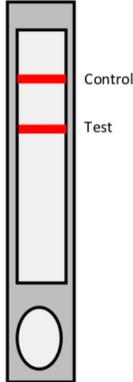
Type of test	Time to results	What it tells us	What it cannot tell us
Rapid diagnostic test (RDT)	10-30 minutes	The presence or absence (qualitative) of antibodies against the virus present in patient serum.	The quantifiable amount of antibodies in the patient serum, or if these antibodies are able to protect against future infection
Enzyme linked immunosorbent assay (ELISA)	1-5 hours	The presence or absence (quantitative) of antibodies against the virus present in patient serum.	If the antibodies are able to protect against future infection.
Neutralization assay	3-5 days	The presence of active antibodies in patient serum that are able to inhibit virus growth ex vivo, in a cell culture system. Indicates if the patient is protected against future infection.	It may miss antibodies to viral proteins that are not involved in replication.

Lateral Flow Assay

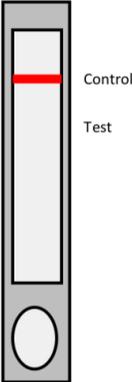
Blood sample and buffer are added to the test well. Any antibodies contained in the sample will start to flow down the strip.



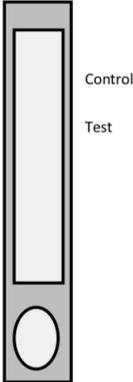
Positive Result



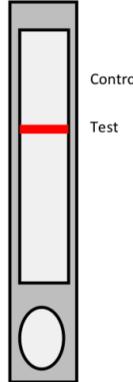
Negative Result



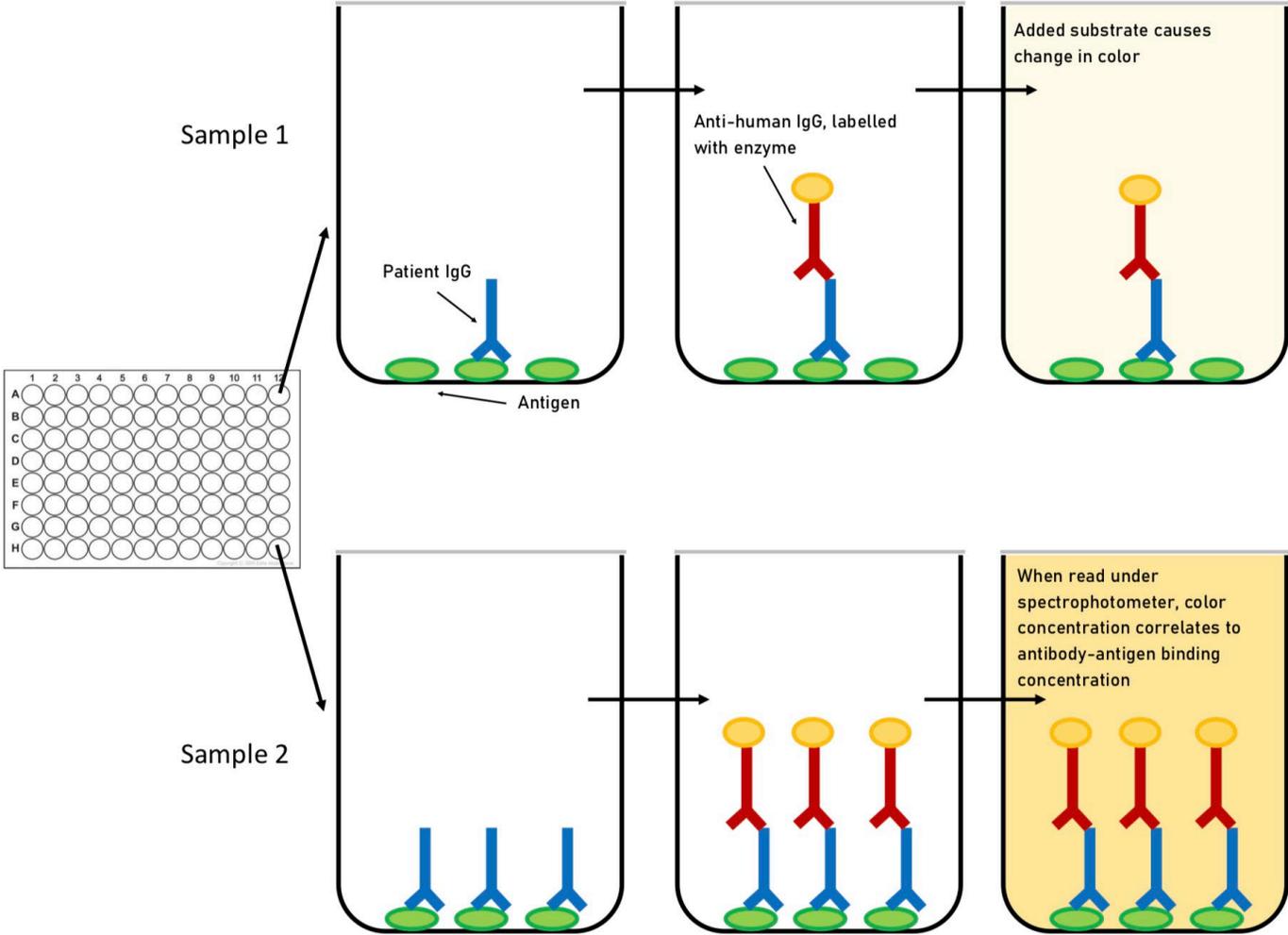
Inconclusive Result



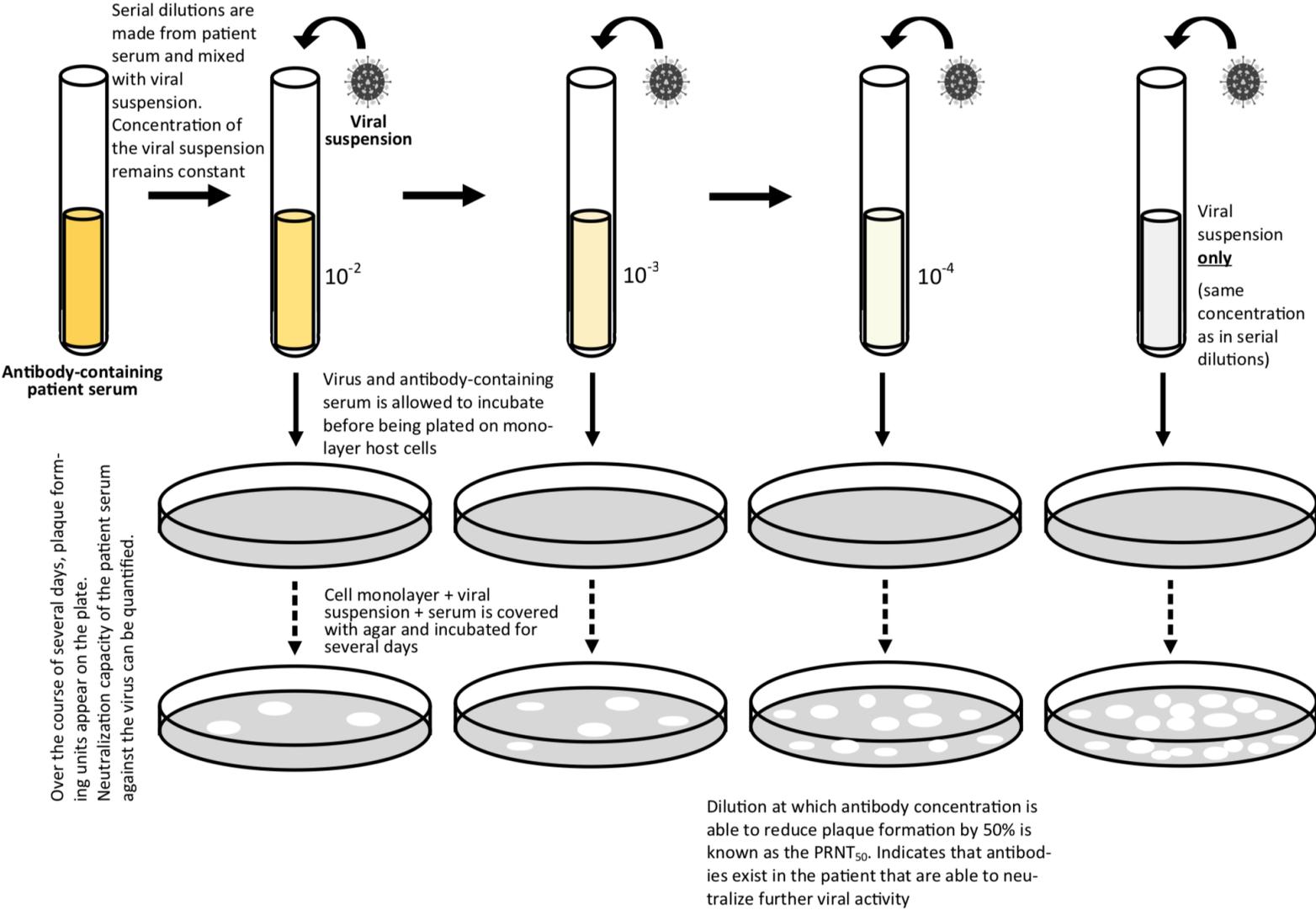
Inconclusive Result



ELISA



Neutralization Assay



Questions



A stylized graphic on the left side of the slide. It features two dark green mountain peaks with rounded tops. Below the mountains is a dark green wavy band representing a forest or a valley. At the bottom is a dark blue wavy band representing water. The graphic is composed of solid colors and simple shapes.

Multnomah County

Health Department

Case Investigation and Contact Tracing

David Cuevas

Disease Intervention Specialist

Communicable Disease Services

Multnomah County

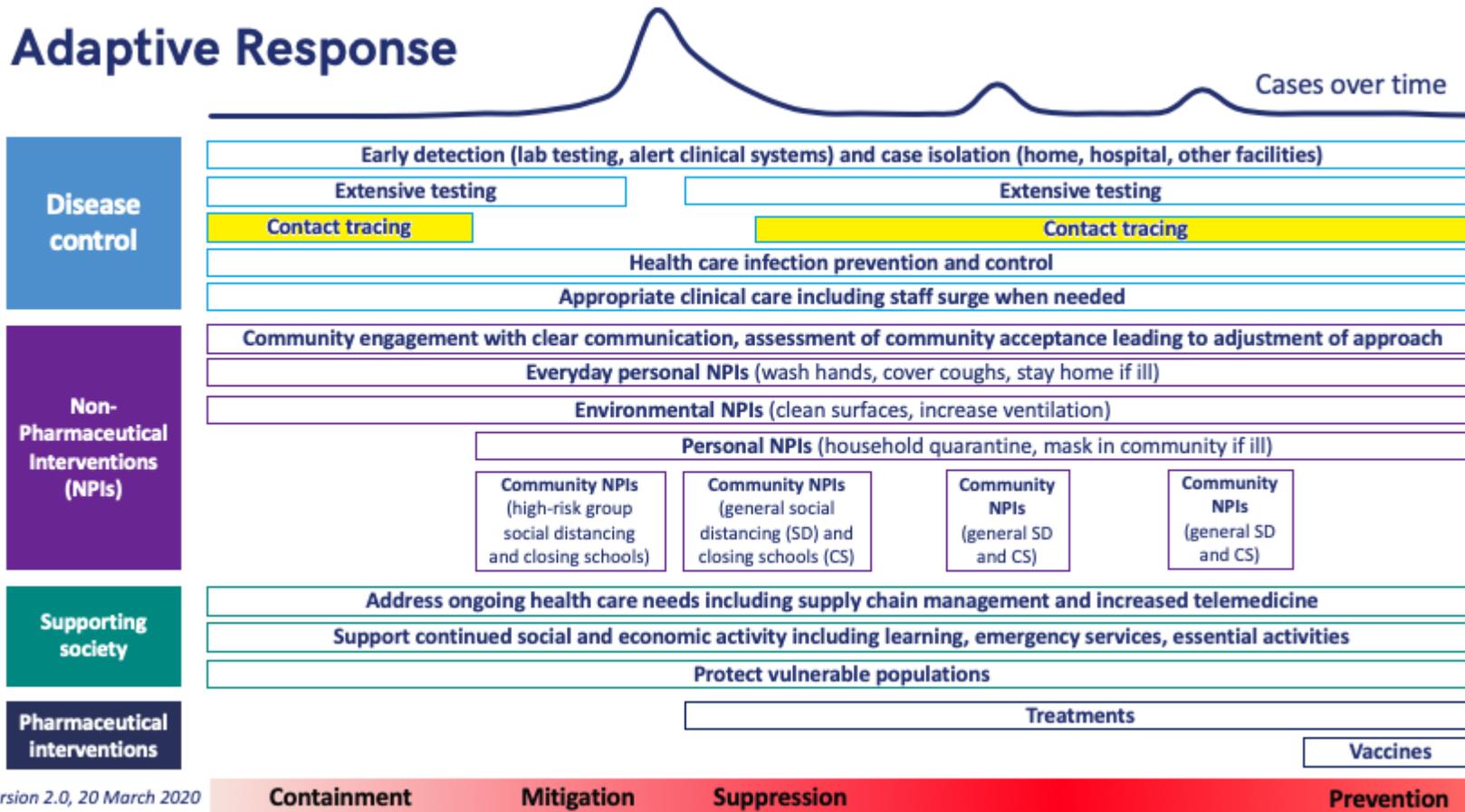
Case Investigation and Contact Tracing

Mitigation vs. Containment



Multnomah County

Adaptive Response

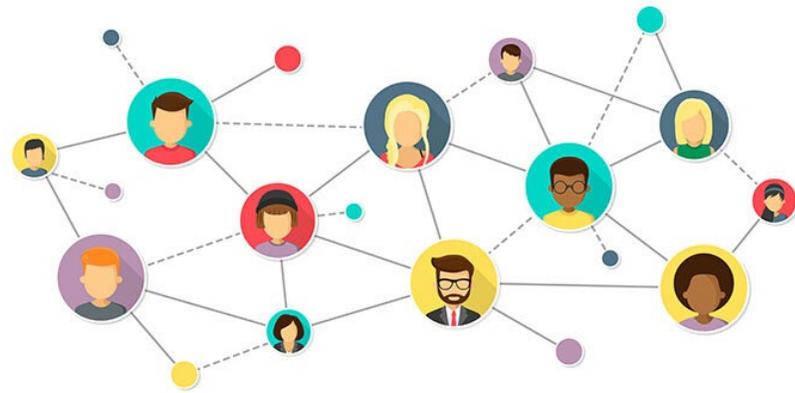


Version 2.0, 20 March 2020

Multnomah County

Contact Investigation / Contact Tracing

- To identify persons with COVID-19, prevent transmission to others, improve health outcomes and better understand the epidemiology of this disease
- To identify those with significant exposure to COVID-19, and to monitor them for signs of infection



Multnomah County

What's the difference between quarantine and isolation?

If you might have been exposed to COVID-19, you should stay home. This is called **quarantine**.



cdc.gov/coronavirus

CS317937-A 07/14/2020

Multnomah County

What's the difference between quarantine and isolation?

Isolation separates people **who are infected** with the virus from others, **even in their home.**

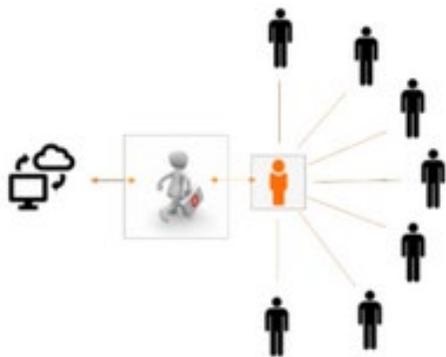


cdc.gov/coronavirus

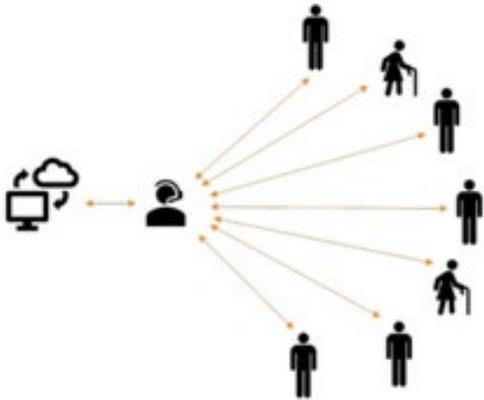
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Multnomah County

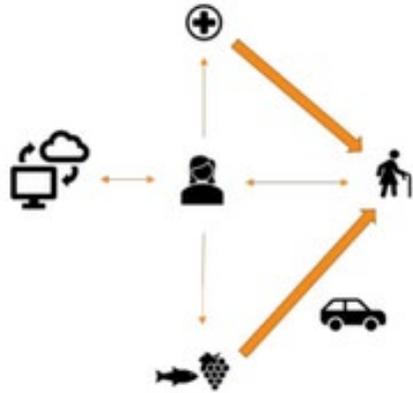
Case Investigators



Contact Tracers



Care Resource Coordinator

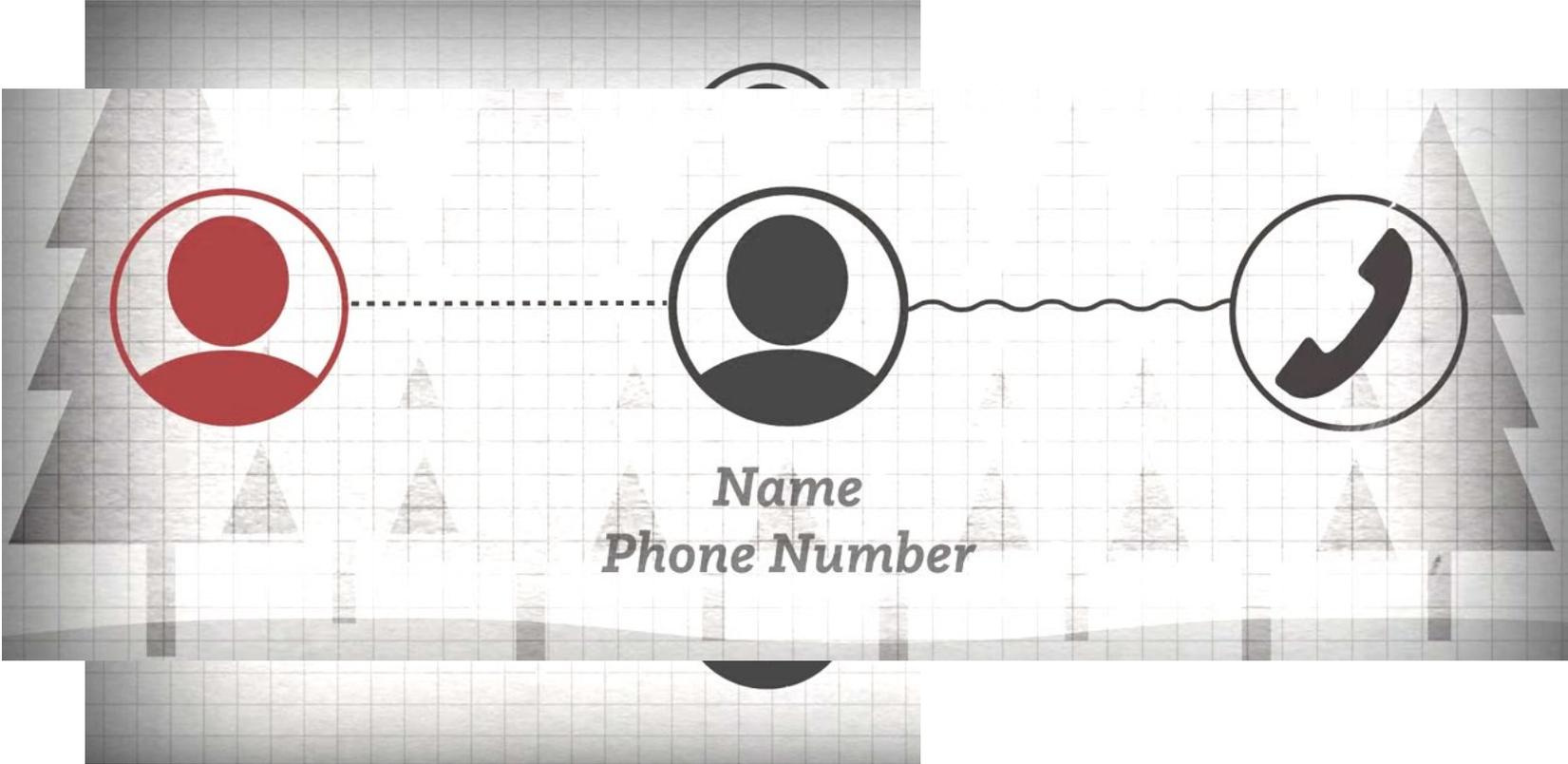


Multnomah County

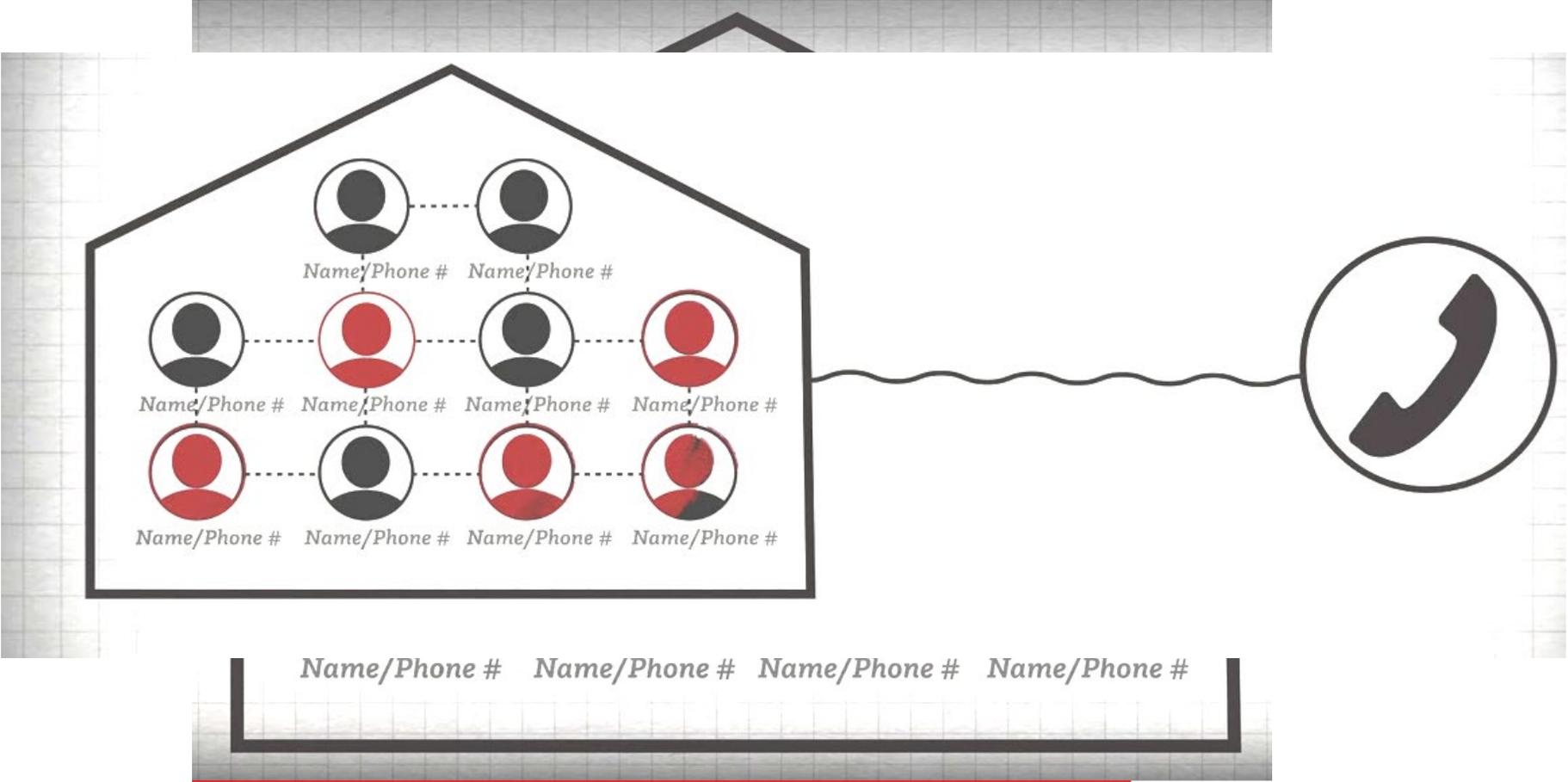
M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

2-14 day exposure period

Multnomah County



Multnomah County

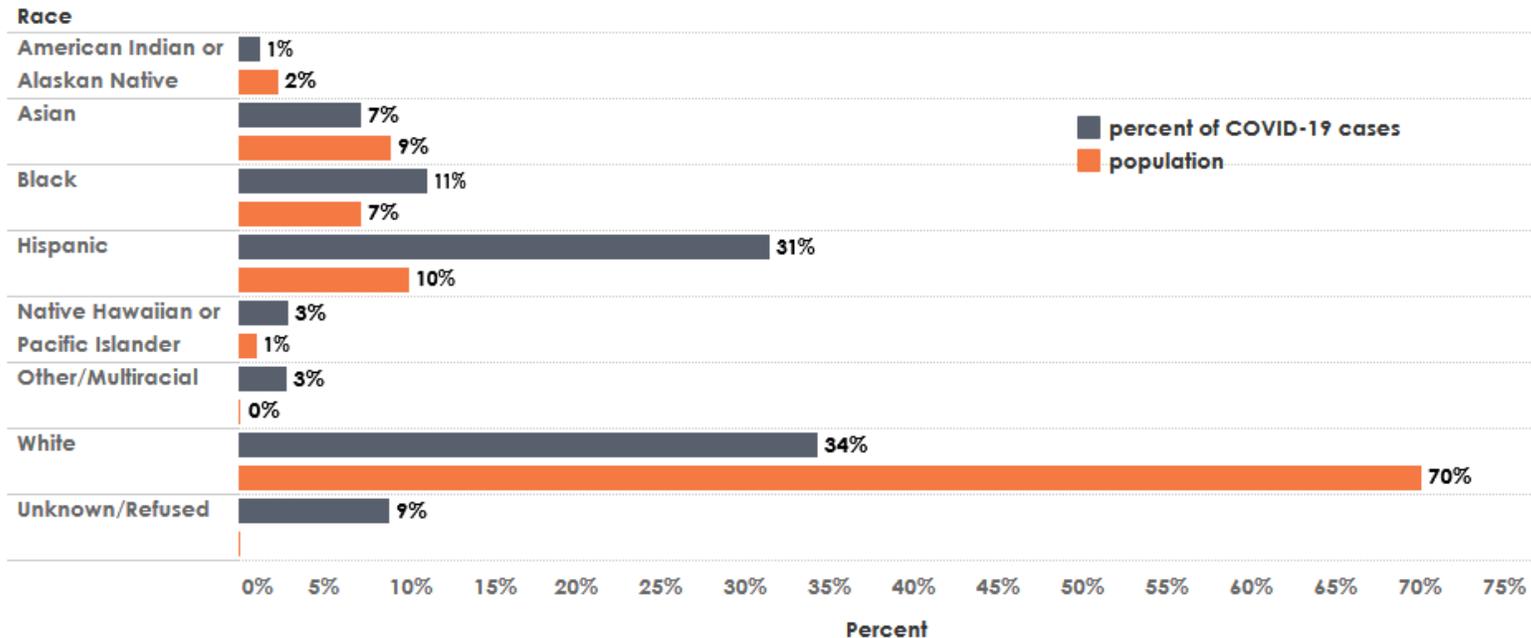


Multnomah County

Health Equity Considerations and Racial and Ethnic Minority Groups

Cases by race/ethnicity and population proportions

Percent of COVID-19 Cases Compared to Multnomah County Population Proportions



Multnomah County

Health Equity Considerations and Racial and Ethnic Minority Groups

- **Discrimination:** Unfortunately, discrimination exists in systems meant to protect well-being or health. Examples of such systems include health care, housing, education, criminal justice, and finance. Discrimination, which includes racism, can lead to chronic and toxic stress and shapes social and economic factors that put some people from racial and ethnic minority groups at increased risk for COVID-19
- **Healthcare access and utilization:** People from some racial and ethnic minority groups are more likely to be uninsured than non-Hispanic whites

Multnomah County

- **Housing:** Some people from racial and ethnic minority groups live in crowded conditions that make it more challenging to follow prevention strategies.
- **Educational, income, and wealth gaps:** Inequities in access to high-quality education
- **Occupation:** People from some racial and ethnic minority groups are disproportionately represented in essential work settings .

Multnomah County

Contact Investigation / Contact Tracing

Thank you



- Please complete the post-session survey in order to receive CME
- 1st and 3rd Thursdays, 12-1 p.m.: Oregon Health Authority COVID-19 Informational Session for All Providers: next OHA session is September 3
- 2nd and 4th Thursdays, June 11-December 10, 12-1:15 p.m.: Project ECHO COVID-19 Response for Oregon Clinicians - Part 2
- **Next COVID ECHO session is Thursday September 10th and the topic is *Coronavirus Vaccine Development Update*- Mark Slifka PhD, Virologist, OHSU**

“All Teach, All Learn”

- Clinicians learn from specialists
- Clinicians learn from each other
- Specialists learn from practicing clinicians

oregonechonetwork.org

The screenshot shows a web browser window with the address bar displaying 'oregonechonetwork.org'. The website header includes the Project ECHO logo and a navigation menu with links for Home, All About ECHO, Programs, About Oregon ECHO Network, ECHO IT, Partners, Contact Us, and Log In. The main content area features a large heading 'Connect and Learn' and a red button labeled 'Log In or Create Your Account'. Below the heading, a paragraph describes ECHO as an interactive educational and community-building experience. At the bottom of the page, there is a photograph of a rocky coastline with waves crashing against the shore.

Oregon ECHO Network

Home All About ECHO Programs About Oregon ECHO Network ECHO IT Partners Contact Us Log In

WELCOME TO THE OREGON ECHO NETWORK

Connect and Learn

Log In or Create Your Account

ECHO is an interactive educational and community-building experience that allows healthcare professionals throughout the state of Oregon to create a case-based learning environment through the convenience of video connection.

Click for [Oregon ECHO Network's current programs](#) or scroll down to learn more.

