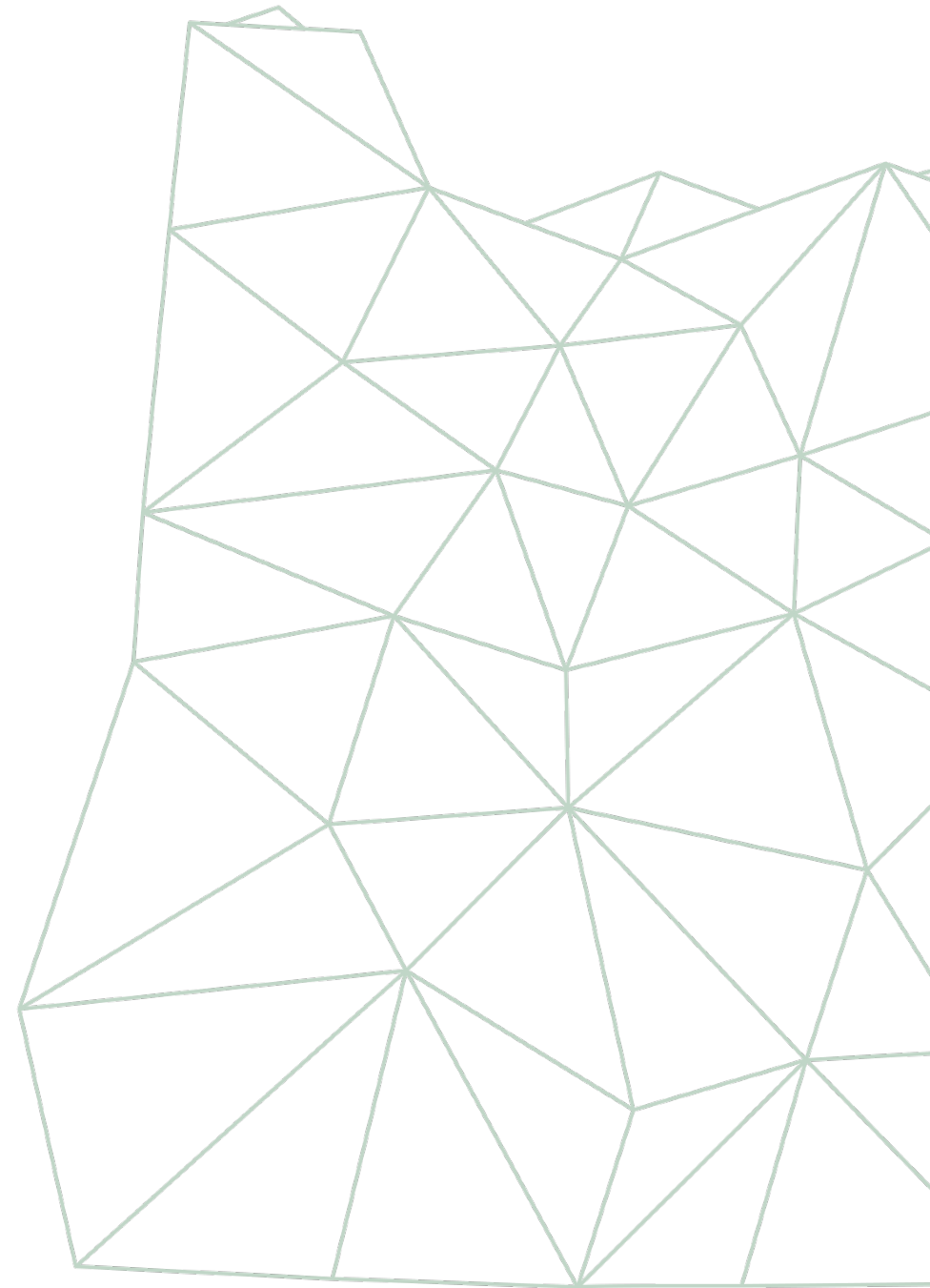




*Special*

# Oregon COVID-19 Response for Clinicians

Session 10 May 21, 2020





## *Sign up ! “COVID-19 Response ECHO for Oregon Clinicians Part II”*

### **Registration is open for Cohort 2 of the COVID-19 ECHO**

- 2nd and 4th Thursday of each month, noon – 1 p.m.
- Begins June 11 and continues through September 24, 2020
- You must register to receive CME for these sessions
- COVID-19 ECHO Part II Objectives:
  - 1) Provide the latest information on COVID-19 impact in Oregon;
  - 2) Receive guidance on evidence-based management of COVID-19;
  - 3) Forum to share clinical, community, and system cases to improve quality and inform ‘best practice’

*Sign up at [www.oregonechonetwork.org](http://www.oregonechonetwork.org)*

1. Go to  
[www.oregonechonetwork.org](http://www.oregonechonetwork.org)  
And click on the sign-up link.



2. You'll need to log in  
to your Connect  
account and click the  
button to sign up for  
the ECHO

## COVID-19 RESPONSE ECHO FOR OREGON CLINICIANS, PART 2

### WHEN THIS ECHO MEETS

2nd and 4th Thursdays, noon-1 p.m.

### START DATE

6/11/2020

### WHAT THIS ECHO WILL FOCUS ON

This 8-Session program will support clinicians throughout Oregon during the COVID-19 pandemic. Jointly presented with the Oregon Health Authority, sessions will look at Oregon's response to the pandemic, the state of the science in treatment and prevention, and offer guidance to practices for necessary systems change.

### END DATE

9/24/2020

### LEARNING OBJECTIVES/OUTCOMES

1. Learn strategies to optimize the treatment of COVID-19 patients while keeping staff and others safe
2. Stay current on the Oregon Health Authority's latest guidance for Oregon healthcare practices
3. Get guidance on evidence-based treatments for COVID-19
4. Through case-based learning, share and receive advice on systems change within practices.

### WHEN EACH SESSION WILL BE HELD

SIGN UP FOR THIS ECHO

# *Special* COVID-19 ECHO Series Goals

1. Provide the latest information on the COVID-19 pandemic and it's impact on Oregon
2. Deliver brief didactic sessions on key areas, e.g., clinical management, hospital/critical care management, prevention, practice system & workflow, community impact, ethical issues, older adult & vulnerable populations, long term care management, etc.
3. Provide a forum to share clinical, community, and system cases to improve quality and inform 'best practice'

# Today's Agenda

- COVID-19 Update
- Expert presentation: “ More Testing and Transmission of COVID-19 AND Vaccine Update”, Mark Slifka PhD
- Q & A



# Oregon Health Authority

COVID-19 Update, May 21, 2020

Dana Hargunani, MD MPH

Tom Jeanne, MD, MPH

# Agenda Items

- COVID-19 epi and hospitalization data
- Re-opening Oregon
- Pediatric Multisystem Inflammatory Syndrome
- Contact Tracing
- Testing Update
- On the horizon...
- Closing

# Epidemiology Update



# The COVID-19 Pandemic Update in Oregon

As of May 20:

- 3,701 positive COVID-19 tests
- 144 deaths
- 98,348 negative tests
- Test results do not reflect the full impact of COVID-19 in our state

# Testing Results Summary through 5/15

*Summary of Oregon test results through 5/15/20*

	Pre- 2/28	2/29- 3/6	3/7- 3/13	3/14- 3/20	3/21- 3/27	3/28- 4/3	4/4- 4/10	4/11- 4/17	4/18- 4/24	4/25- 5/1	5/2- 5/8	5/9- 5/15	Total to date
<b>Positive</b>	1	12	35	66	348	437	472	414	392	402	453	438	3,470
<b>Negative</b>	3	122	466	1,460	7,050	7,434	9,318	8,683	8,779	12,282	14,028	16,349	85,974
<b>Total results</b>	4	134	501	1,526	7,398	7,871	9,790	9,097	9,171	12,684	14,481	16,787	89,444
<b>% positive</b>	25.0%	9.0%	7.0%	4.3%	4.7%	5.6%	4.8%	4.6%	4.3%	3.2%	3.1%	2.6%	3.9%

As of May 15, Oregon's cumulative positive testing rate has remained fairly consistent at about 3.9% of tests performed. This is considerably lower than the national average of 15.0%.

Oregon's decreasing weekly test-positivity rate reflects decreasing numbers of individuals with COVID-19 due to Governor Kate Brown's stay-at-home order and increasing testing statewide, including the tests run at hospital laboratories and commercial laboratories.

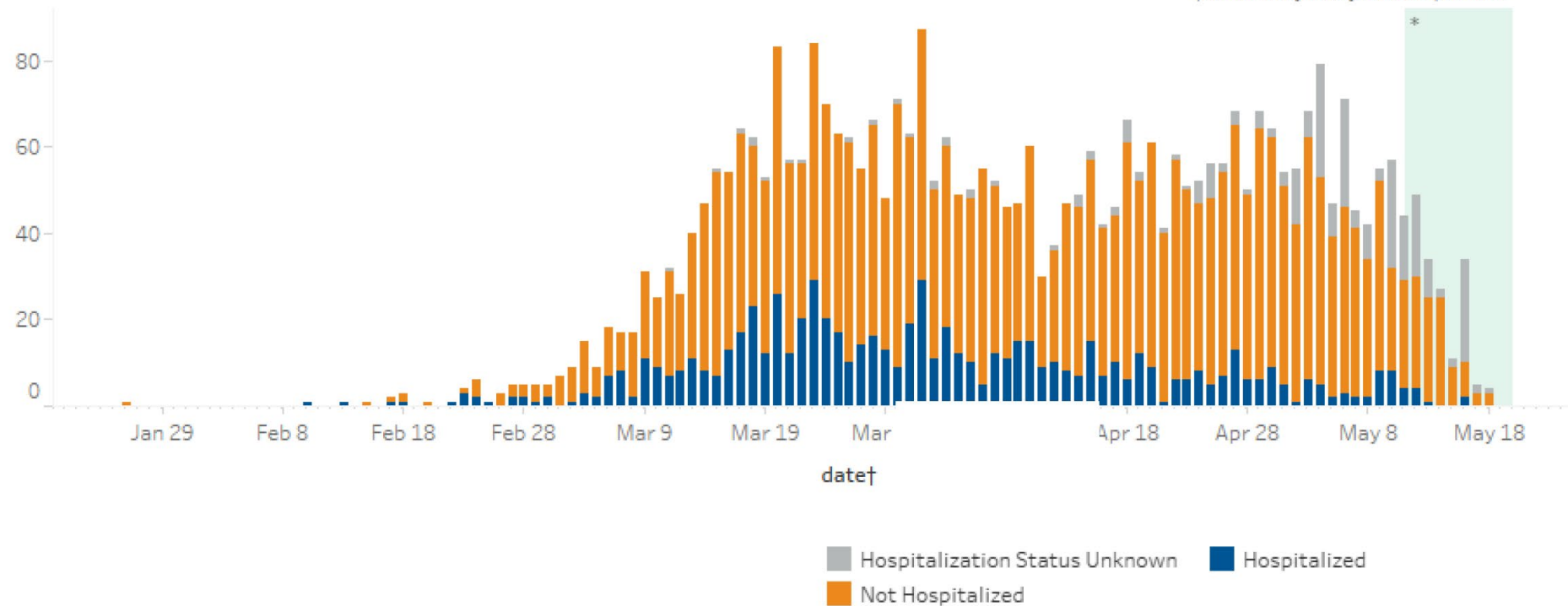
# Epidemiologic curve

## Oregon's Epi Curve: COVID-19 cases

This chart shows the number of Oregonians who have been identified as COVID-19 cases and whether they were ever hospitalized for their illness.†

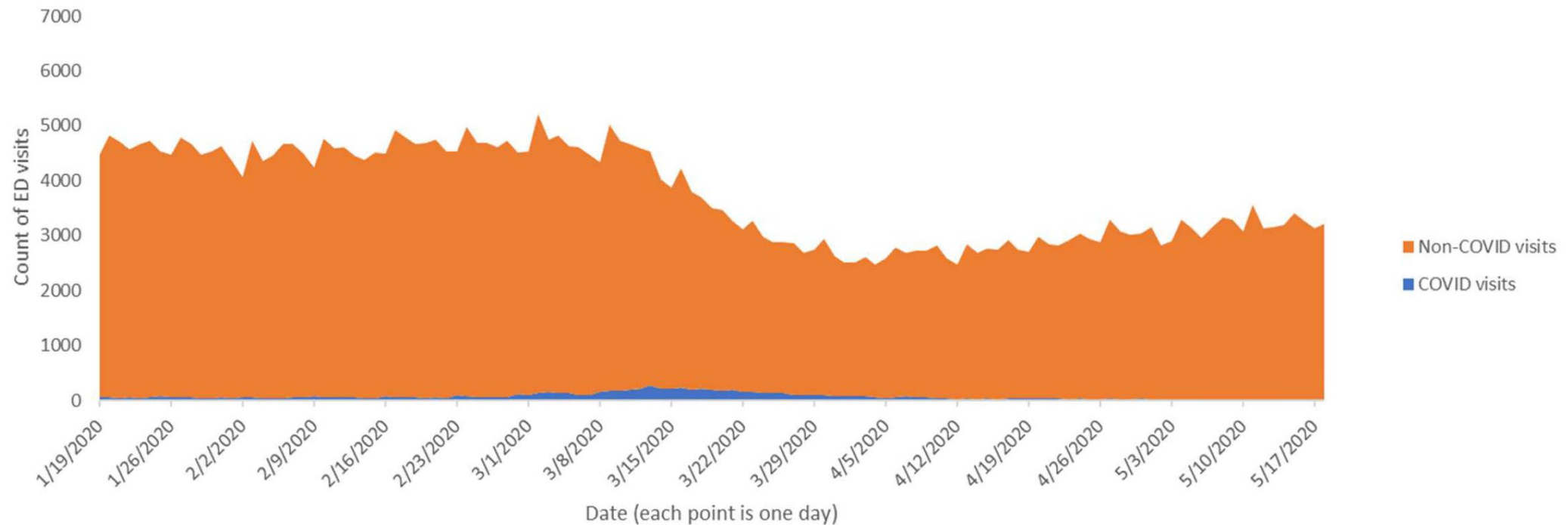
Total Cases	Hospitalized	Not Hospitalized	Hospitalization Status Unknown
3,801	723	2,820	258

\*Illnesses that began during this time period may not yet be reported.



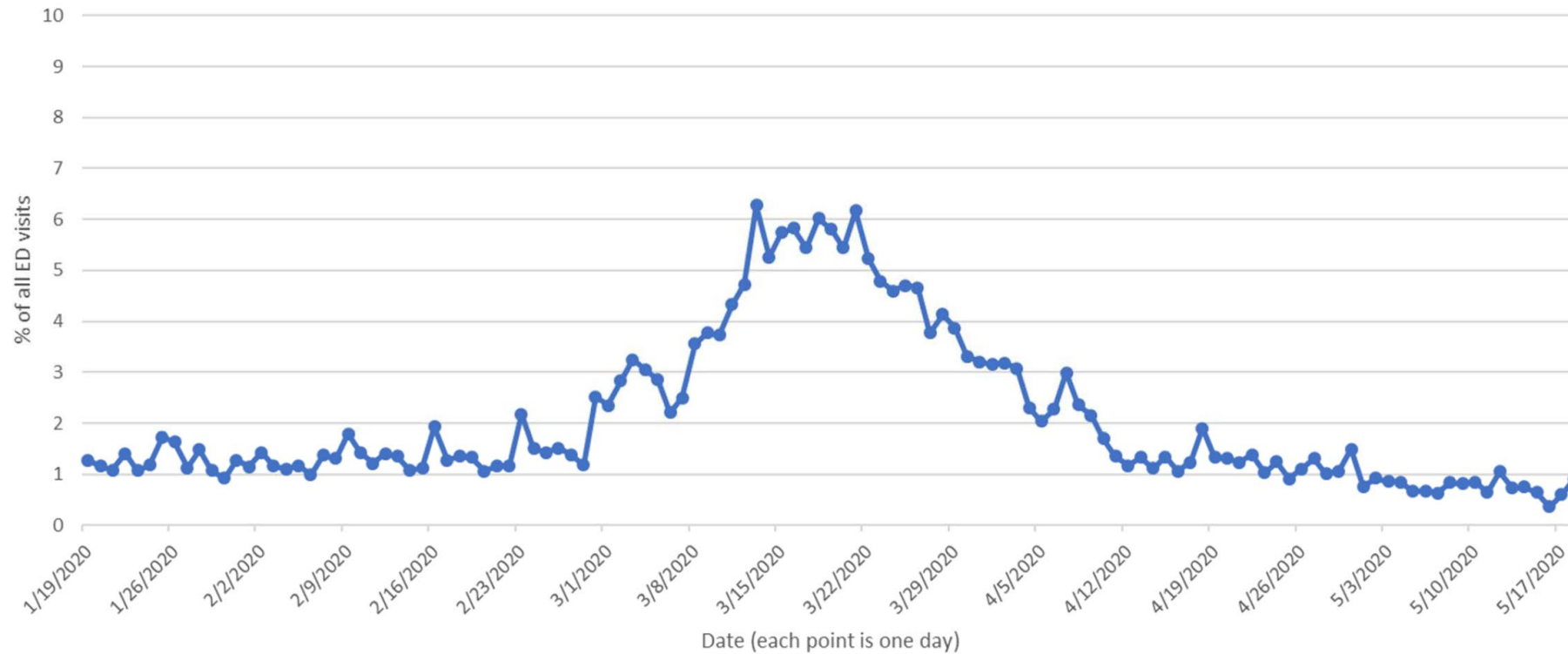
# Daily ED visits

COVID-like visits still make up a small proportion of all reported ED visits, and total ED visits have decreased...



# Daily ED visits for CLI

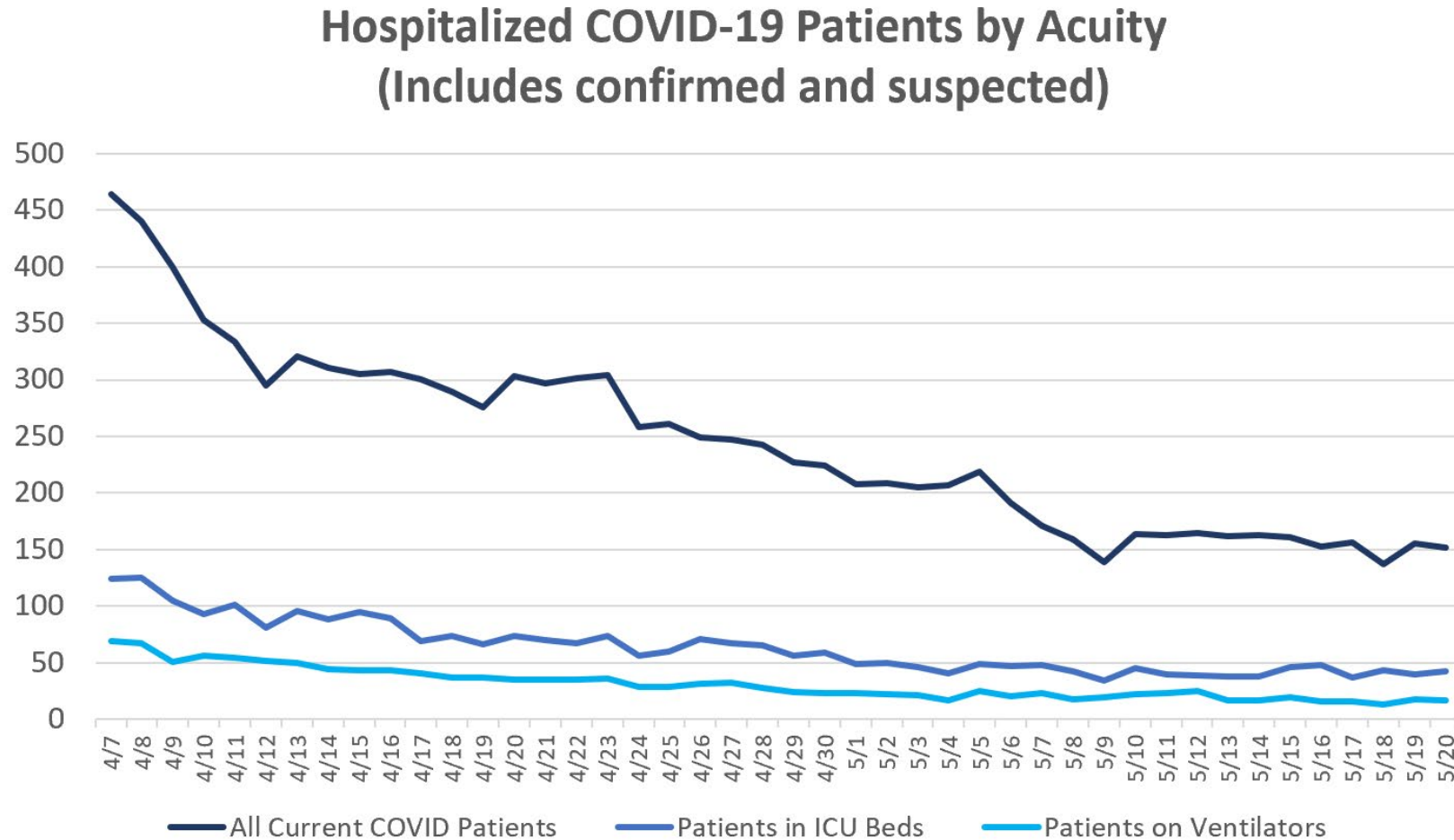
... and the percentage of COVID-like visits has decreased.



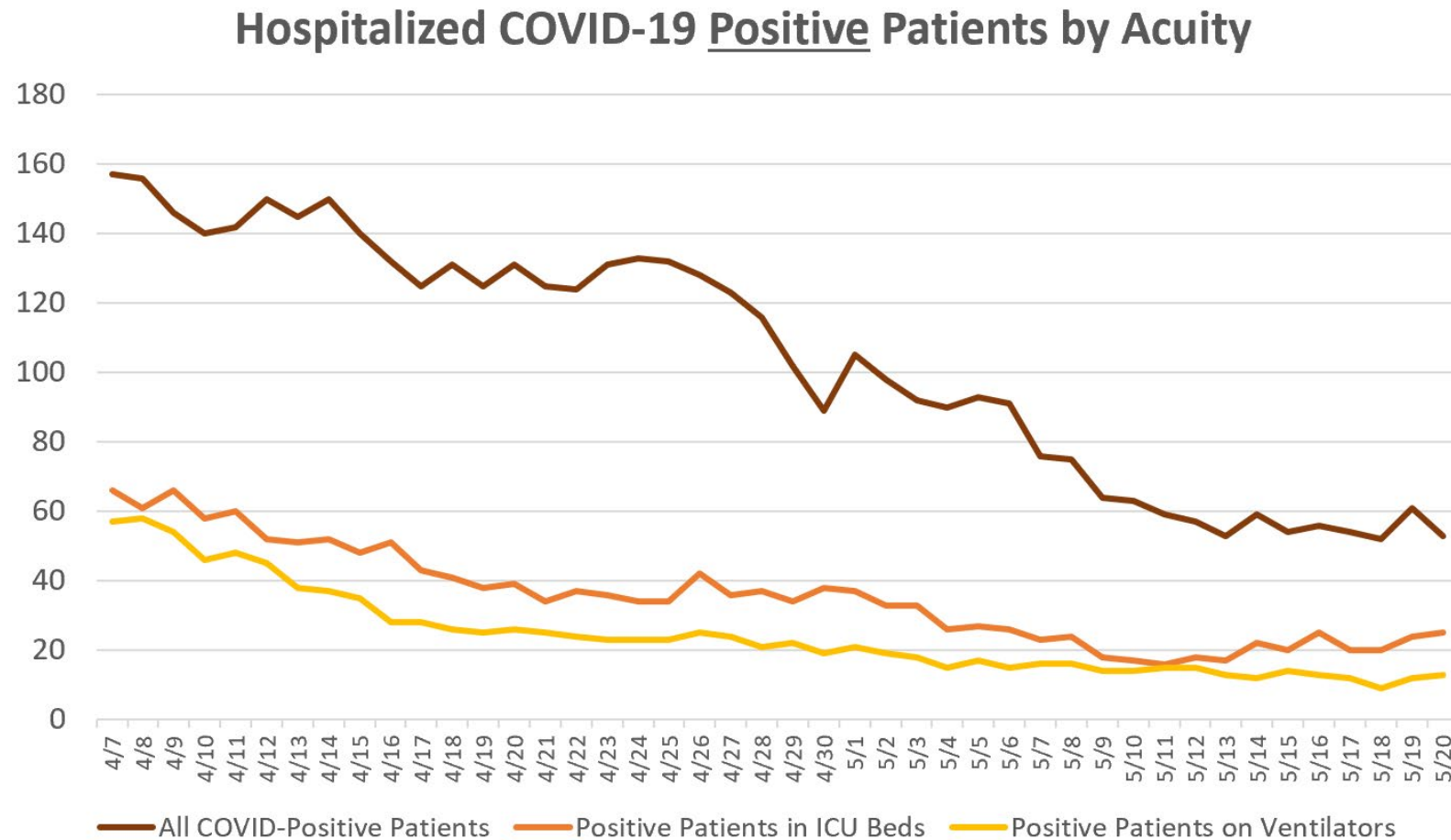
# Current COVID-19 Hospitalizations: May 20

	Currently Hospitalized COVID-19 Patients*	Currently Hospitalized COVID-19 Positive Patients**
Hospitalized COVID-19 Patients	152	53
COVID-19 Patients in ICU Beds	42	25
COVID-19 Patients on Ventilators	17	13
*Includes both confirmed and suspected COVID-19 patients		
**Includes only confirmed positive COVID-19 patients		

# Trends in COVID-19 Hospitalizations



# Trends in COVID-19 Hospitalizations





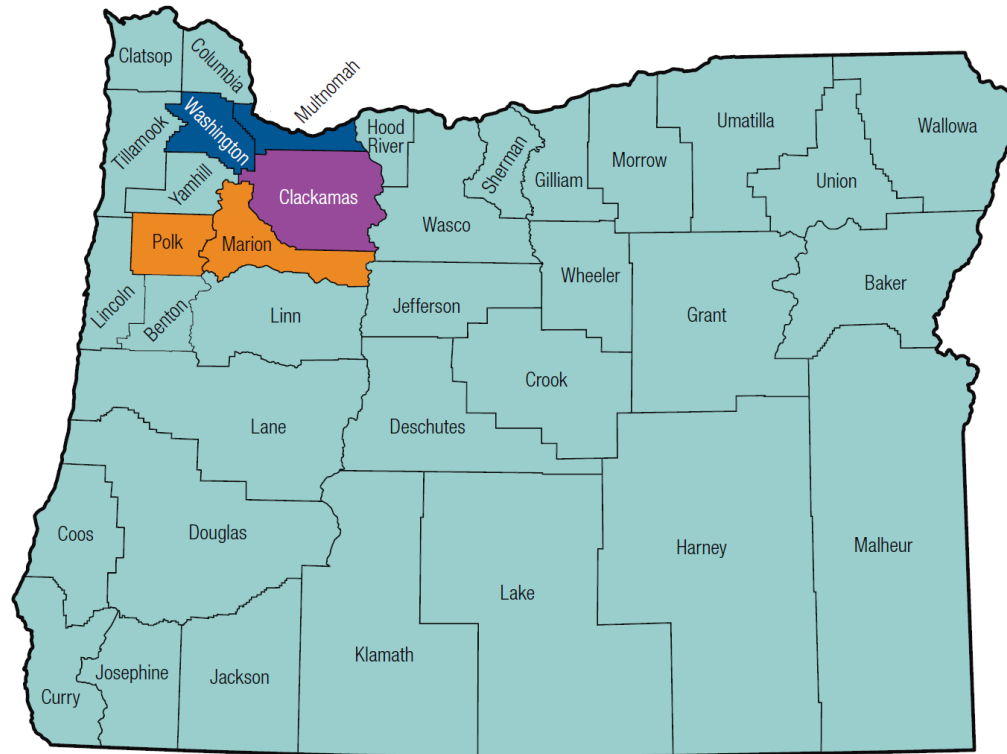
# Reopening Oregon

# Phased Reopening

## Phase I:

- Local gatherings for local groups only up to 25 (no travel)
- Restaurants/bars: physical distance spacing, employees wear cloth face or disposable coverings, end all consumption by 10 pm
- Personal services: by appointment, pre-appointment health check, maintain customer log, six feet physical distancing, face coverings/capes/smocks

# OREGON COUNTIES APPROVED TO ENTER PHASE I



Building a safe and strong Oregon

May 20, 2020

- Counties that are approved for Phase I reopening
- Counties that were not approved for Phase I
- Counties under review for Phase I
- Counties that have not yet applied for reopening

You can get this document free of charge in other languages, large print, braille or a format you prefer. Contact Mavel Morales at 1-844-882-7889, 711 TTY or [OHA.ADAModifications@dhsosha.state.or.us](mailto:OHA.ADAModifications@dhsosha.state.or.us).

OHA 2321D (05/20/2020)

# Reopening Criteria: [www.healthoregon.org/coronavirus](http://www.healthoregon.org/coronavirus)

## Oregon Health Authority | COVID-19 Updates

[Reopening Criteria](#)



On March 8, Gov. Kate Brown declared a state of emergency to address the spread of COVID-19 in Oregon. An Executive Order issued March 23 directs Oregonians to stay home except for essential needs. The Oregon Health Authority (OHA) serves as the lead agency for the public health response.

**You can help stop COVID-19 from spreading.** Wash your hands and cover your cough. Stay home if you are sick and avoid contact with people who are sick. For general information on COVID-19 in Oregon, **call 211**. If you are having a medical emergency, call 911.

[COVID-19 News](#)

[Sign up for Updates](#)

[Contact Us](#)

[Governor's Website](#)

[Contact Tracing Interest Form](#)



# Reopening Criteria: ED visits for COVID-like illness

## Percent of emergency department visits for COVID-19-like illness is less than historic average for flu at the same time of year

The percentage of emergency department visits for the flu or flu-like illness normally averages **1.5%** when it is not flu season\* (May through September). Statewide, emergency visits for COVID-19-like illness must stay below the seasonal average for any counties to reopen.

**Statewide: 1.1% - Met**



The solid blue line shows the statewide percent of emergency visits for COVID-19-like illness. It needs to stay below the red dashed line (1.5%).

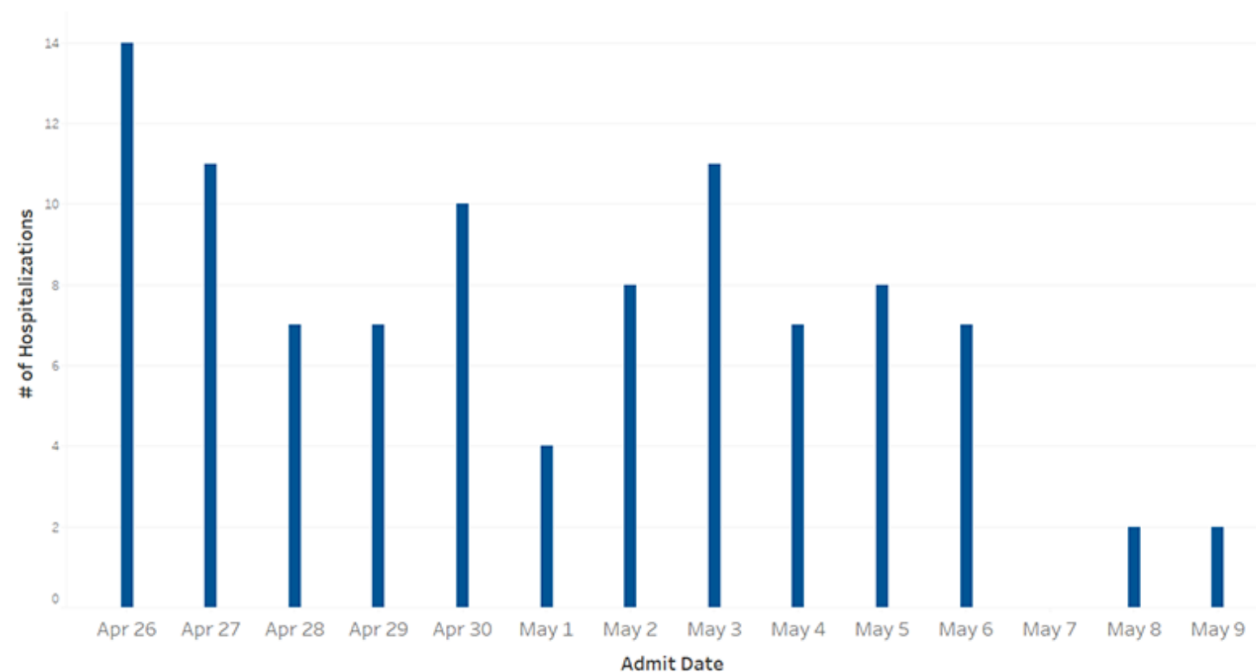
\*The 1.5% seasonal average is based on data collected from the Northwest Region, which includes Alaska, Idaho, Oregon, and Washington.

# Reopening Criteria: 14-day hospital admission trends

## COVID-19 hospital admissions show a 14-day decline

Statewide, COVID-19 hospitalizations need to be going down.

Statewide: Met



The bars show the statewide number of daily hospital admissions for COVID-19. The trend has been declining from April 26 through May 9.

Counties where more than 5 people have been hospitalized for severe COVID-19 symptoms in the past 28 days must see declining hospitalizations for 14 days in order to begin reopening.

# Reopening Guidance: [www.healthoregon.org/coronavirus](http://www.healthoregon.org/coronavirus)

## Governor's Orders and OHA Guidance

Governor's Executive Orders and Resources



Reopening Oregon



OHA Guidance and Signage



# Reopening Guidance Statewide

Guidance that applies statewide, starting May 15

## General Guidance for Employers

5/16/2020

[Spanish](#) | [Arabic](#) | [Simplified Chinese](#) | [Traditional Chinese](#) | [Chuukese](#) | [Hmong](#) | [Korean](#) | [Marshallese](#) | [Russian](#) | [Somali](#) | [Vietnamese](#)

## Retail Stores

5/16/2020

[Spanish](#) | [Arabic](#) | [Simplified Chinese](#) | [Traditional Chinese](#) | [Hmong](#) | [Korean](#) | [Marshallese](#) | [Russian](#) | [Somali](#) | [Vietnamese](#)

## Child Care Operations

5/16/2020

[Spanish](#) | [Arabic](#) | [Simplified Chinese](#) | [Traditional Chinese](#) | [Chuukese](#) | [Korean](#) | [Russian](#) | [Vietnamese](#)

## Transit Agencies

5/14/2020

[Spanish](#) | [Arabic](#) | [Simplified Chinese](#) | [Traditional Chinese](#) | [Chuukese](#) | [Hmong](#) | [Korean](#) | [Marshallese](#) | [Russian](#) | [Somali](#) | [Vietnamese](#)






## School Aged Summertime Day Camps

5/15/2020

[Spanish](#) | [Arabic](#) | [Simplified Chinese](#) | [Traditional Chinese](#) | [Hmong](#) | [Korean](#) | [Marshallese](#) | [Russian](#) | [Somali](#) | [Vietnamese](#)



# Reopening Guidance Phase 1

Guidance for counties that enter Phase 1 reopening	
<a href="#">📍 County Status Chart</a>	
<p> <b>Personal Services Providers</b></p> <p><a href="#">Spanish</a>   <a href="#">Arabic</a>   <a href="#">Simplified Chinese</a>   <a href="#">Traditional Chinese</a>   <a href="#">Chuukese</a>   <a href="#">Hmong</a>   <a href="#">Korean</a>   <a href="#">Marshallese</a>   <a href="#">Russian</a>   <a href="#">Somali</a>   <a href="#">Vietnamese</a></p>	5/17/2020
<p> <b>Restaurants and Bars</b></p> <p><a href="#">Spanish</a>   <a href="#">Arabic</a>   <a href="#">Simplified Chinese</a>   <a href="#">Traditional Chinese</a>   <a href="#">Hmong</a>   <a href="#">Korean</a>   <a href="#">Marshallese</a>   <a href="#">Russian</a>   <a href="#">Somali</a>   <a href="#">Vietnamese</a></p> <p> <b>FAQs</b></p>	5/17/2020
<p> <b>Shopping Centers and Malls</b></p> <p><a href="#">Spanish</a>   <a href="#">Arabic</a>   <a href="#">Simplified Chinese</a>   <a href="#">Traditional Chinese</a>   <a href="#">Chuukese</a>   <a href="#">Hmong</a>   <a href="#">Korean</a>   <a href="#">Marshallese</a>   <a href="#">Russian</a>   <a href="#">Somali</a>   <a href="#">Vietnamese</a></p>	5/16/2020
<p> <b>Fitness-related Organizations</b></p> <p><a href="#">Spanish</a>   <a href="#">Arabic</a>   <a href="#">Simplified Chinese</a>   <a href="#">Chuukese</a>   <a href="#">Korean</a>   <a href="#">Russian</a>   <a href="#">Vietnamese</a></p>	5/18/2020

# **Pediatric Multisystem Inflammatory Syndrome**

# Pediatric Multisystem Inflammatory Syndrome—CDC case definition

## **CDC Case Definition for Multisystem Inflammatory Syndrome in Children (MIS-C)**

An individual aged <21 years presenting with fever<sup>i</sup>, laboratory evidence of inflammation<sup>ii</sup>, and evidence of clinically severe illness requiring hospitalization, with multisystem ( $\geq 2$ ) organ involvement (cardiac, renal, respiratory, hematologic, gastrointestinal, dermatologic or neurological); **AND**

No alternative plausible diagnoses; **AND**

Positive for current or recent SARS-CoV-2 infection by RT-PCR, serology, or antigen test; or COVID-19 exposure within the 4 weeks prior to the onset of symptoms

# Pediatric Multisystem Inflammatory Syndrome—CDC case definition

<sup>i</sup>Fever  $\geq 38.0^{\circ}\text{C}$  for  $\geq 24$  hours, or report of subjective fever lasting  $\geq 24$  hours

<sup>ii</sup>Including, but not limited to, one or more of the following: an elevated C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), fibrinogen, procalcitonin, d-dimer, ferritin, lactic acid dehydrogenase (LDH), or interleukin 6 (IL-6), elevated neutrophils, reduced lymphocytes and low albumin

## Additional comments

- Some individuals may fulfill full or partial criteria for Kawasaki disease but should be reported if they meet the case definition for MIS-C
- Consider MIS-C in any pediatric death with evidence of SARS-CoV-2 infection

# Pediatric Multisystem Inflammatory Syndrome—CDC case definition

## Additional CDC information:

- Healthcare providers who have cared or are caring for patients younger than 21 years of age meeting MIS-C criteria should report suspected cases to their local, state, or territorial health department.
- It is currently unknown if multisystem inflammatory syndrome is specific to children or if it also occurs in adults.
- There is limited information currently available about risk factors, pathogenesis, clinical course, and treatment for MIS-C.

## First Reported PMIS Case in Oregon

- OHA distributed a press release on 5/13 which can be found here: <https://www.oregon.gov/oha/ERD/Pages/OHA-announces-1st-case-of-COVID-19-linked-pediatric-condition.aspx>
- A Health Advisory Notice was distributed to Oregon health providers on May 14th

# Contact Tracing and Case Investigation Basics

# Contact Tracing

## Oregon COVID-19 Contact Collaborative

- Joint initiative of OHA, local public and tribal health authorities, and community-based organizations to reduce the spread of COVID-19 through coordinated, statewide contact tracing
- Trained staff from state, local, and tribal health authorities and community-based organizations, including multilingual community members and leaders

Contact tracing is a public health method used to identify people who have been exposed to an illness to help slow down the spread of the disease

- Contacts of people with COVID-19 are identified during case investigation
- Educate people how to prevent the spread of the virus by staying at home or at the location provided by local public health (quarantine), and how to care for themselves and others they may live with if they develop symptoms

# Case Investigation

Calls to a person with a **confirmed positive COVID-19 test**:

- Case investigator will help them remember the places they visited and people they may have been in contact with since two days before symptoms began (contact = <6 feet from someone for >15 minutes)
- Case investigator will ask for contact information for people they had contact with. A public health team member will contact those people, but they will not tell them any information about the person with the confirmed case.
- Case investigator will provide information on isolation and preventing further spread



# Contract Tracing

Calls to a person identified as a **contact of a person with COVID-19**:

- The Oregon COVID-19 Contact Collaborative will reach out via phone to inform them that they may have been exposed to COVID-19. They will share information about how to prevent the spread of the virus, how to care for yourself, and how to connect with resources in your community.
- Even if no symptoms, they will be advised to voluntary self-quarantine for 14 days
- During this time, the Contact Collaborative team will contact them daily (phone or text) to check in about any symptoms or questions they have
- They will be given information on symptoms to watch for, and if they develop symptoms will be connected with resources on how to get tested

# Contact Tracing

- Contact tracing is done by telephone and mail, not in person
- Information is strictly confidential
- Contact tracers will ask for
  - County of residence
  - Date of birth
  - Contact information, including phone number, email address, and mailing address
  - Occupation
  - Symptoms of COVID-19
- Contact tracers will never ask for
  - Social security number
  - Immigration status (Information will not be shared with immigration authorities or law enforcement for immigration purposes)
  - Credit card number, bank account, or billing information

# Testing Update

# Antibody testing

Serology testing, which looks for antibodies in blood, is increasingly available: 12 tests have FDA EUA

- OHA recommends against using any COVID-19 test that does not have FDA EUA
- List of all tests with FDA Emergency Use Authorization: <https://www.fda.gov/medical-devices/emergency-situations-medical-devices/emergency-use-authorizations#covid19ivd>

**Antibody testing is not recommended for diagnosis or exclusion of COVID-19**

When using antibody testing, notify patients of limitations of the test

- Still unknown whether antibodies confer full or partial immunity to COVID-19 or for how long.
- Cross-reactivity with other coronaviruses may be a concern
- **EUA ≠ FDA approval**

# Antibody testing

OHA is tracking all lab reports from serology tests. Positive serology results are categorized as suspect cases

- Public health does not follow-up on positive serology; if resources allow LPHA may call provider to ask if molecular test was also done
- Only confirmed and presumptive cases are included in case counts

FDA comparison of selected antibody test performance: <https://www.fda.gov/medical-devices/emergency-situations-medical-devices/eua-authorized-serology-test-performance>

# Antigen testing

- There is one antigen test with FDA EUA to date: Quidel Sofia 2 SARS Antigen FI.
- <https://www.fda.gov/media/137885/download>
- It is a rapid (results in minutes), point-of-care test that detects SARS-CoV and SARS-CoV-2.
- Specimen: nasal swabs
- Performance data based on small studies from the manufacturer shows a sensitivity of 80% compared to PCR and a specificity of 100%.
  - Higher chance of false negatives, which is problematic
- No cross-reactivity with other respiratory viruses, including human coronaviruses, was found.

# Concerns with Abbott ID NOW

Abbott ID NOW is a platform that allows rapid molecular testing (similar to PCR, but isothermal); results in <15 minutes

Abbott's small internal performance study showed 100% sensitivity and specificity for their COVID-19 test, but  $n=50$  and it was a contrived study with spiked samples

FDA issued release on May 14 about data suggesting inaccurate results from the ID NOW COVID-19 test

- FDA has received 15 adverse event reports about the Abbott ID NOW test that suggest some users are receiving inaccurate negative results
- <https://www.biorxiv.org/content/10.1101/2020.05.11.089896v1.full.pdf>
- NYU study (preprint) compared ID NOW with nasal swabs to Cepheid PCR test with NP swabs

# Concerns with Abbott ID NOW

FDA issued release on May 14 about data suggesting inaccurate results from the ID NOW COVID-19 test

- In NYU study, ID NOW missed a third of positive samples when using NP swabs in VTM and over 48% when using dry nasal swabs
- Other studies have showed sensitivity of 85–98%
- FDA: “Negative results may need to be confirmed with a high-sensitivity authorized molecular test”
- ID NOW machines are in use around the state, but represent a small portion of total testing capacity
- OHA is reviewing evidence, including types of specimen collection and transport



# On the horizon...

Reopening FAQs

Budget

Long-term care facility guidelines

Addressing priority populations

PPE guidance

Testing, testing, testing

Education guidance fall 2020

Monitoring amidst reopening

And much more...

# Closing and Important Contact Info

OHA Coronavirus Information for healthcare providers

<http://www.healthoregon.org/coronavirushcp>

Email your COVID-19 questions here that you want us to address at future informational sessions (*do not expect an individual response and do not send PHI*):

[HealthCare.Provider@dhsosha.state.or.us](mailto:HealthCare.Provider@dhsosha.state.or.us)

# Tri-County (Portland Metro) Update








Sarah Present MD, MPH

Deputy Tri-County Health Officer, Clackamas County

- Interest in contract tracing or volunteering:
  - Fill out interest form on **OHA website**:  
<https://app.smartsheet.com/b/form/dd28696cca4b4e59946d7faa0d2de120>
  - **SERV-OR** is Oregon's roster of licensed physicians, nurses, pharmacists, Emergency Medical Technicians (EMTs), behavioral health providers, respiratory therapists and others who have registered to volunteer in response to local, state, and/or federal emergencies: <https://serv-or.org/>
  - **Washington County Public Health** is hiring for multiple positions related to the COVID-19 response, including contact tracers and resource coordinators. Jobs are posted at <https://www.phi.org/employment/current-opportunities/>. We are committed to hiring locally. Bilingual/bicultural applicants are encouraged to apply.
  - Or you can email **health.recruiting@multco.us**

# Reopening:

- **Clackamas County**-application submitted, pending review
  - <https://www.clackamas.us/coronavirus>
- **Multnomah County**
  - <https://multco.us/novel-coronavirus-covid-19/reopening-multnomah-county-amid-covid-19>
- **Washington County**
  - <https://www.co.washington.or.us/HHS/CommunicableDiseases/COVID-19/reopening-criteria-status.cfm>

Prerequisites	
	Declining prevalence of COVID-19
	Minimum testing regimen
	Contact tracing system
	Isolation facilities
	Finalized statewide sector guidelines
	Sufficient health care capacity
	Sufficient PPE supply

Case Counts

Hospitalization

Demographics

Symptoms and Coexisting Condi...

Testing

Select a button above to view additional data



## COVID-19 Case Counts by County and Week



	Clackamas	Multnomah	Washington	Yamhill	Total
Cases	284	1,013	652	64	2,013
Deaths	9	57	17	7	90

You can filter the chart by county here (default is all counties)

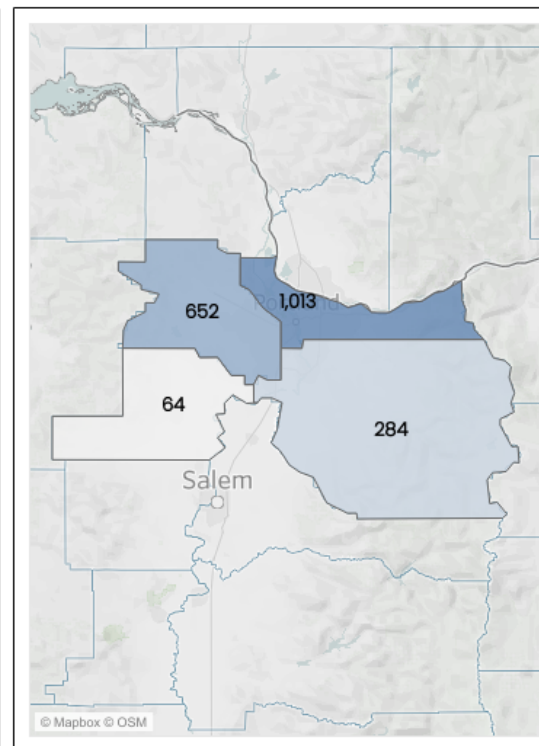
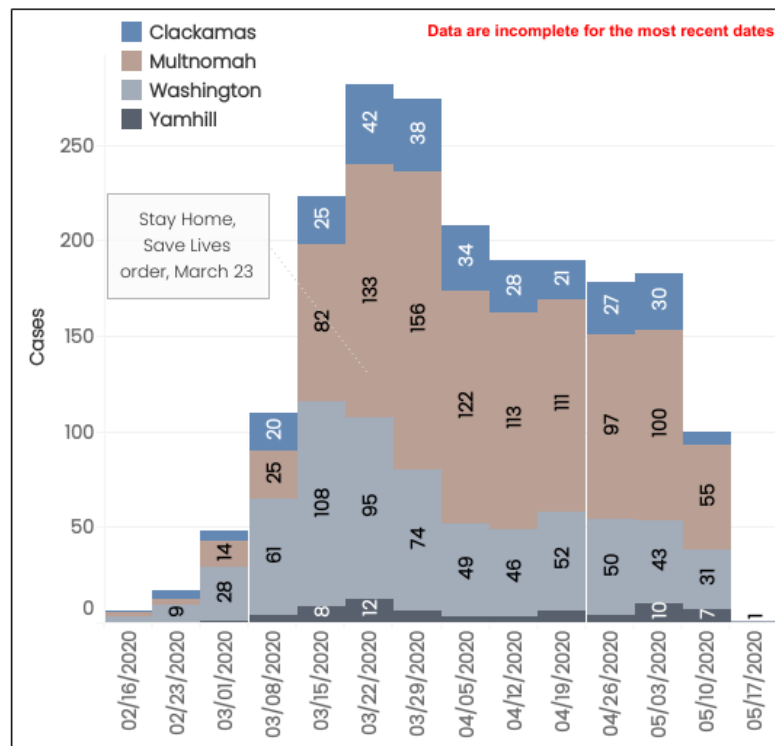
All

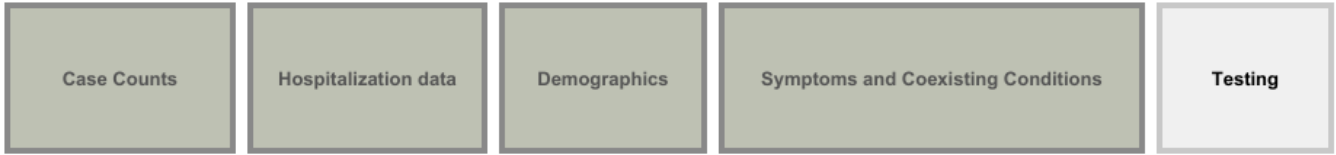
Filter date type (Start of week)

☒ Symptom onset date

☐ Case report date

Last updated: May 19, 2020





Select a button above to view additional data

Multnomah County

CLACKAMAS COUNTY

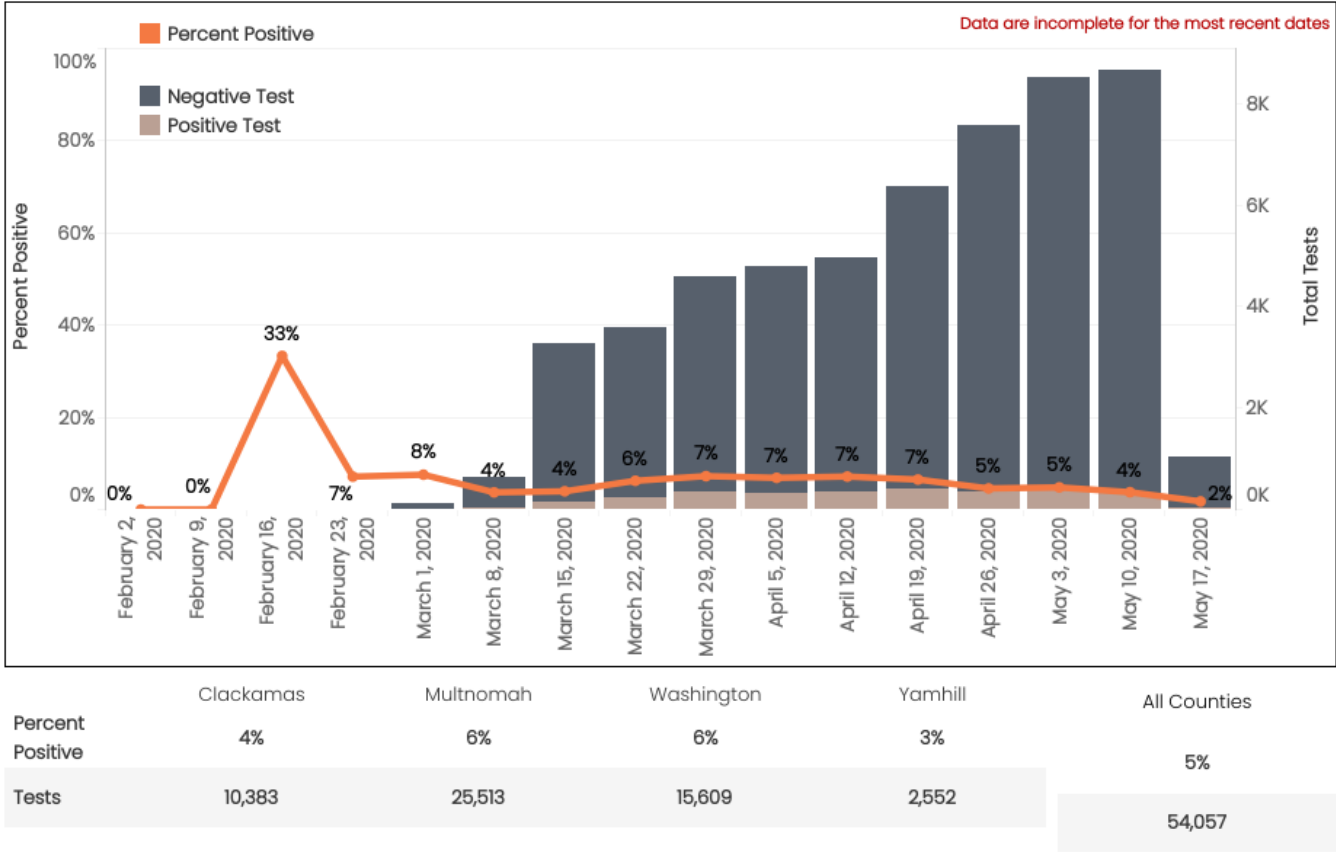
COVID-19 Testing  
County: All

WASHINGTON COUNTY  
OREGON

1843  
YAMHILL COUNTY

You can filter by county here (default is all counties)  
All

Last updated: May 19, 2020

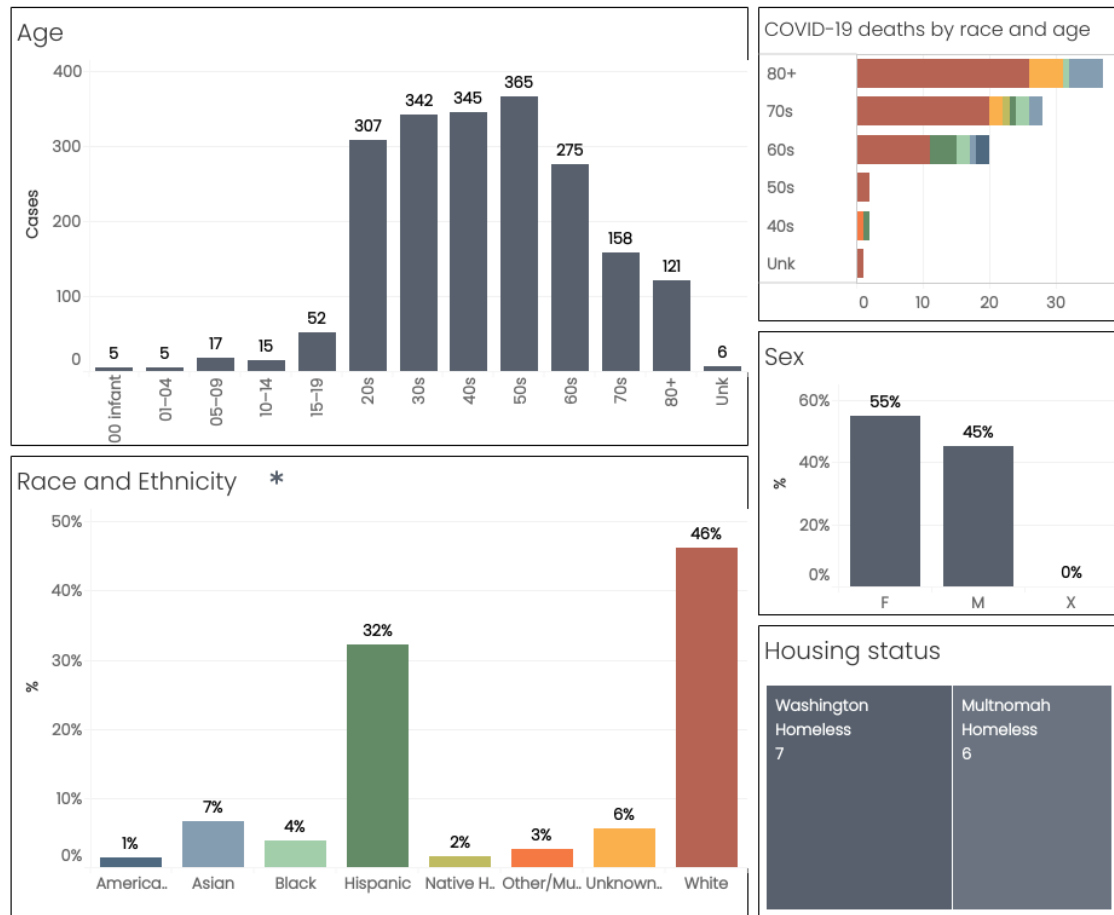


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You can filter by county here (default is all counties)

All

Last updated: May 19, 2020



# *More* Testing and Transmission of COVID19 & Brief Update on Vaccines

Mark K. Slifka, PhD

Professor

Division of Neuroscience

Oregon National Primate Research Center

Oregon Health & Science University

Beaverton, OR 97006

[Slifkam@ohsu.edu](mailto:Slifkam@ohsu.edu)



# Overview

- COVID-19 Transmission 2.0: Are children the potential super-spreaders? (Answer: no)
  - COVID-19 is substantially less common among children vs. adults and *typically* milder disease
  - Children transmit poorly to each other or to adults/teachers/family members
  - Evidence from Australia and The Netherlands have implications for re-opening schools in the fall
- CDC recommendations for COVID-19 mitigation includes fever monitoring
  - Pros/Cons of using temperature checks for private/public surveillance – comparison with RT-PCR
  - What is the definition for COVID-19 fever? - Might depend on where you live
  - Can we develop an evidence-based approach to choosing which diagnostic interventions work best?
- COVID-19 Vaccine update
  - Animal studies are showing protection against challenge and broad immunity across viral isolates
  - Clinical data is just emerging – briefly discuss updates from Moderna mRNA vaccine press release

# COVID-19 and Kids in Oregon

Age group	Cases	Percent	Ever hospitalized <sup>4</sup>	Deaths <sup>2</sup>
0 to 9	27	1%	5	0
10 to 19	103	3%	1	0
20 to 29	459	14%	25	0
30 to 39	560	17%	44	0
40 to 49	565	17%	83	3
50 to 59	574	17%	112	5
60 to 69	464	14%	161	23
70 to 79	304	9%	135	39
80 and over	220	7%	103	60
Not available	10	0%	4	0
<b>Total</b>	<b>3286</b>	<b>100%</b>	<b>673</b>	<b>130</b>

OHA: 4% of total COVID-19 cases occur among children in Oregon

<https://govstatus.egov.com/OR-OHA-COVID-19> accessed 5/12/20

# Why are children less susceptible to COVID-19?

- Not simply due to potential disparity in testing/passive surveillance
  - Active RT-PCR monitoring of 6% of Icelandic population found lower incidence among children
  - Leads to the question of difference being due to virus-related or host-related factors (or both)
- Biology of the virus - better viral “fitness” for the aged host?
  - SARS was also more prevalent among the aged population (i.e., closely related coronavirus)
- Biology of the host - better age-associated resistance to severe infection?
  - Some speculate possible age-based differences in ACE receptor expression but no data yet
  - Many diseases including influenza, measles, chickenpox, even smallpox show evidence of inverse bell curve of higher susceptibility among infants and adults/aged population compared to juveniles

Similar to COVID-19, SARS showed increased age-associated case-fatality rates

**Table 3. Case-fatality ratios**

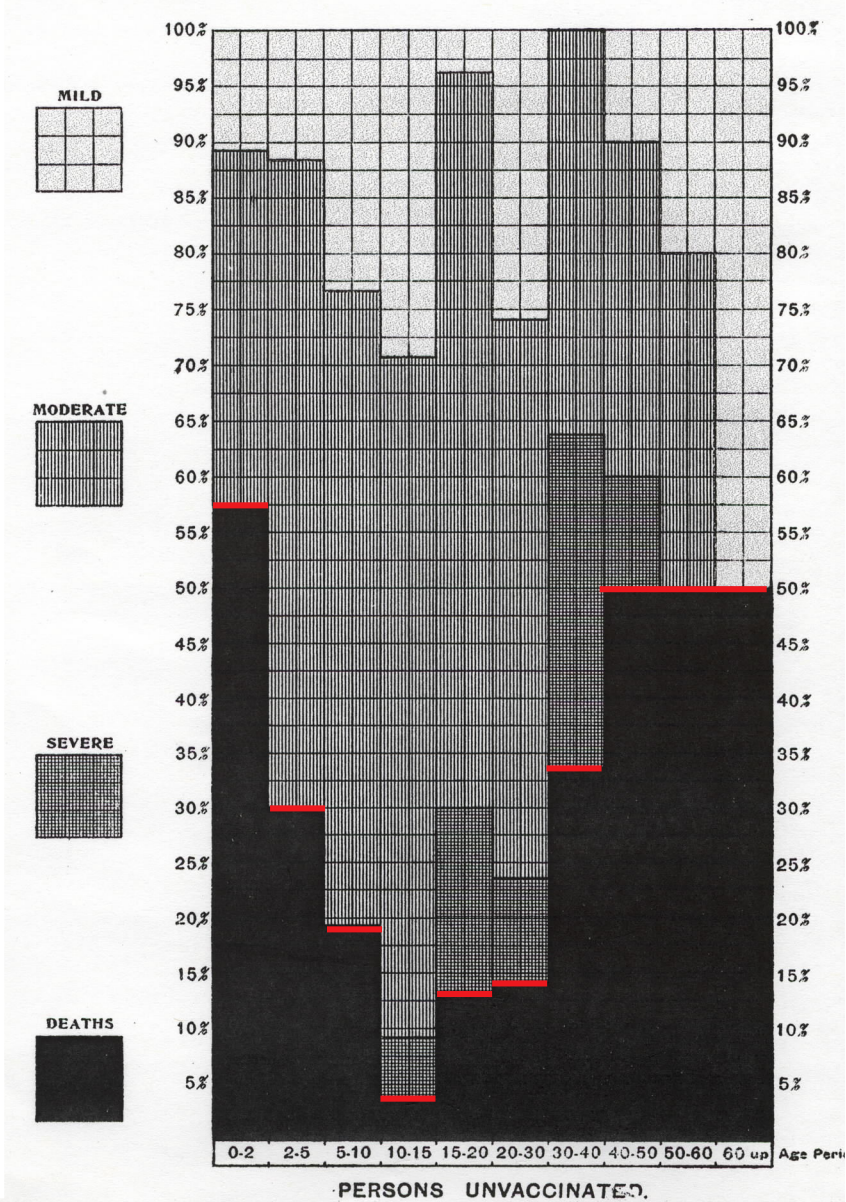
Area	Crude CFR	Comments
Canada	16.7% in probable cases 9.3% of probable and suspect cases combined	Median age of SARS deaths 75 years: 83% over 60 years. Diabetes and co-morbidities independently associated with mortality.
People's Republic of China	The crude CFR in Beijing appears lower than published data. HCW have a low CFR of 1.4%.  Method for determining age-specific CFR not defined.	Age-specific CFR 20–29 0.9% 30–39 3.0% 40–49 5.0% 50–59 10% 60–69 17.6% 70–79 28% 80+ 26.3%
China, Hong Kong SAR	Non-parametric competing risk analysis: 15%  Males have a worse outcome than females in all age groups.  Age-specific CFR lower among HCWs.	Age-specific CFR 0–24 0% (n=0) 25–44 6% (n=29) 45–64 15% (n=35) 65+ 52% (n=87)

<https://www.who.int/csr/sars/en/WHOconsensus.pdf>

# Age-based inverse bell curve of disease severity is common – even for Smallpox

CHART A. SMALL-POX IN LIVERPOOL DURING TEN YEARS 1902-1911.  
Showing the Relative Severity of the Disease as it affects Vaccinated and Unvaccinated persons, based on the Records of 1,163 Cases.

*Studies in smallpox and vaccination*  
William Hanna, 1913



# COVID-19 and Kids in School

Overview: An investigation of 18 COVID-19 cases (9 students, 9 teachers) in 5 primary and 10 high schools found only two secondary cases, both students. Additional testing for the presence of virus and for antibodies to the virus, occurred in a proportion of the total 863 close contacts identified from the school setting.

## Key points:



- 18 individuals (9 students and 9 staff) from 15 schools were confirmed as COVID-19 cases; all of these individuals had an opportunity to transmit the COVID-19 virus (SARS-CoV-2) to others in their schools.
- 735 students and 128 staff were close contacts (863 contacts, total) of these initial 18 cases.
- One child from a primary school and one child from a high school may have contracted COVID-19 from the initial cases at their schools.
- No teacher or staff member contracted COVID-19 from any of the initial school cases.



Source: <http://www.ncirs.org.au/covid-19-in-schools>


[http://ncirs.org.au/sites/default/files/2020-04/NCIRS%20NSW%20Schools%20COVID\\_Summary\\_FINAL%20public\\_26%20April%202020.pdf](http://ncirs.org.au/sites/default/files/2020-04/NCIRS%20NSW%20Schools%20COVID_Summary_FINAL%20public_26%20April%202020.pdf)



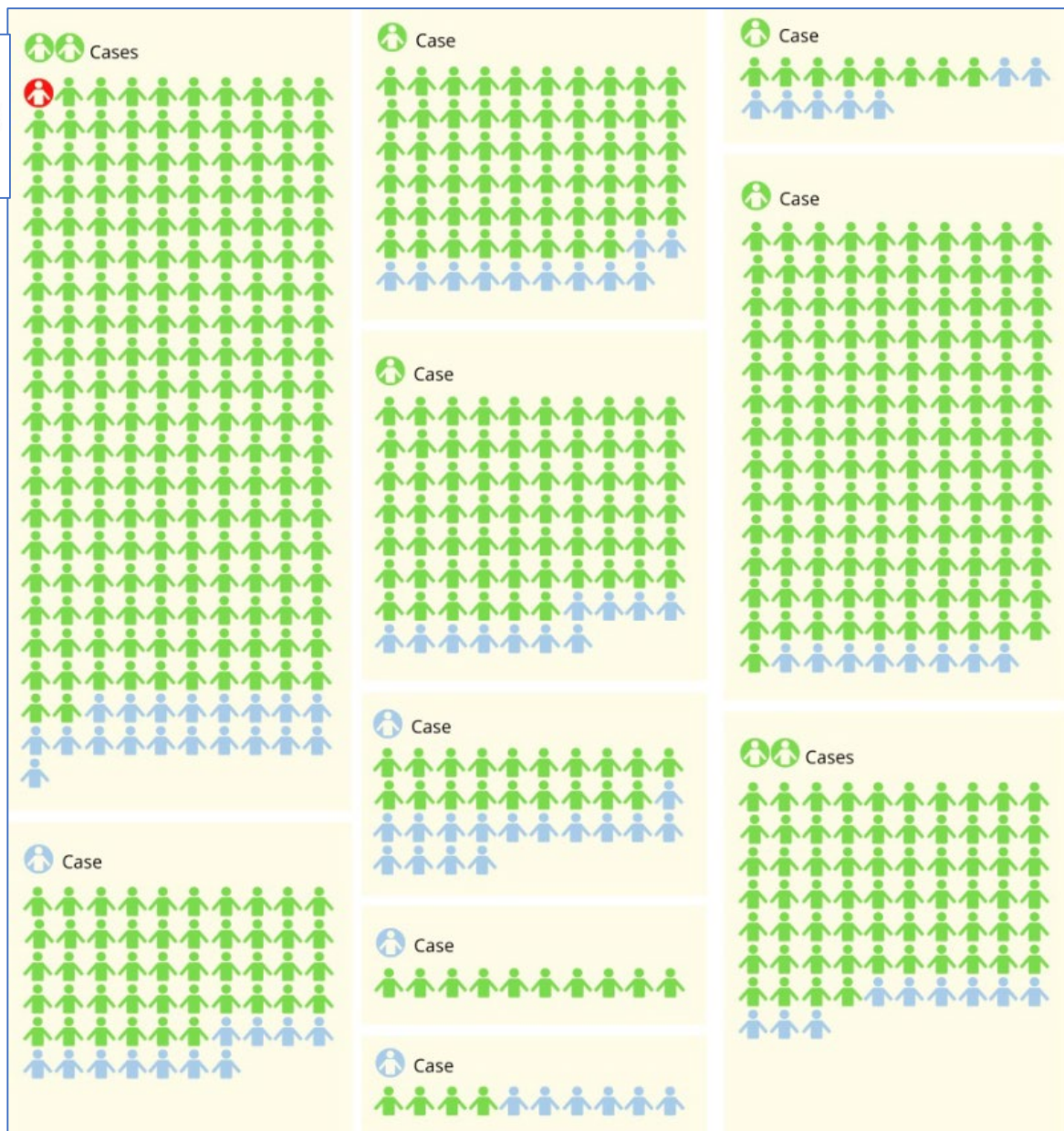
# Cases and close contacts among teachers and students in 10 high schools

**Cases**  
 Staff case  
 Student case

**Close contacts**  
 Staff close contact  
 Student close contact

**Secondary cases**  
 Secondary student case

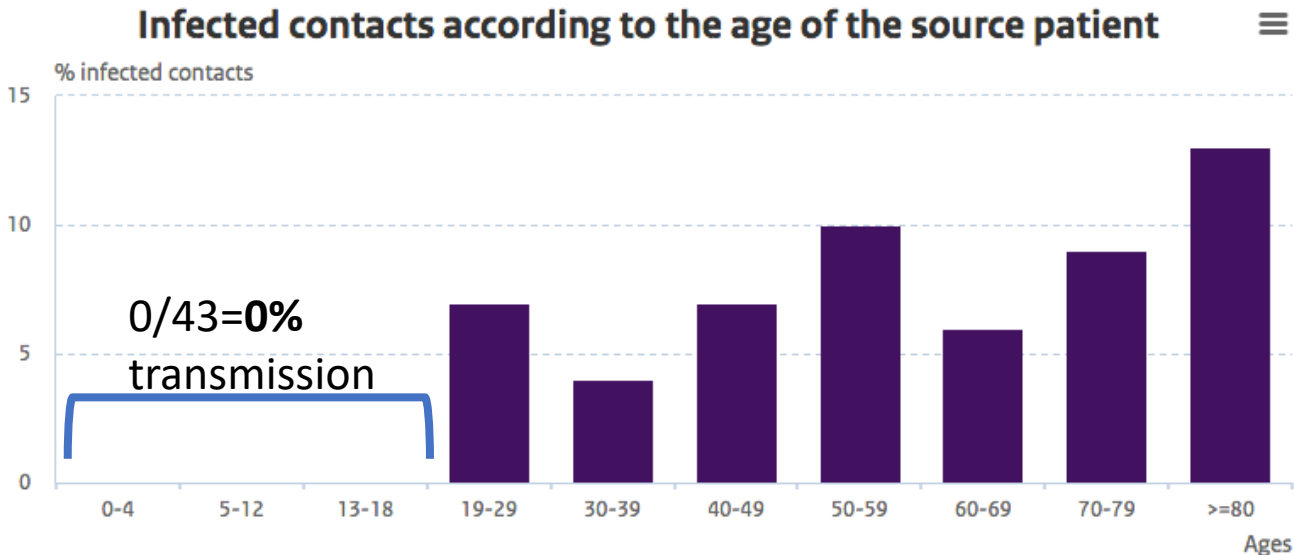
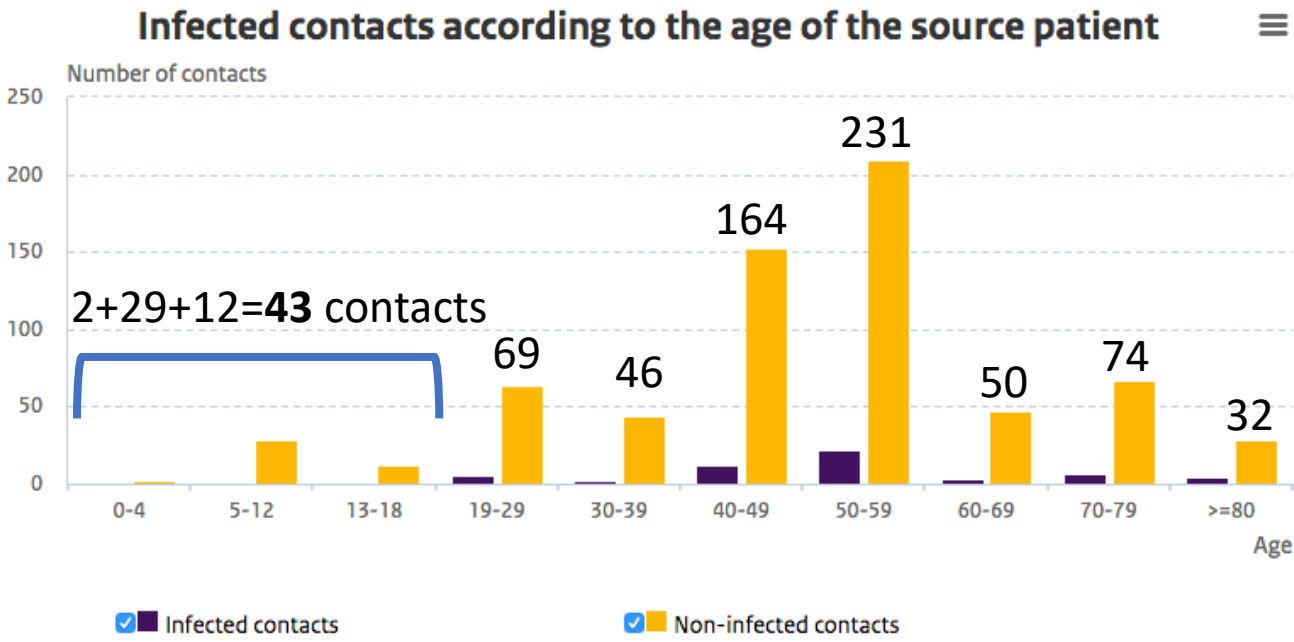
A ‘close contact’ is defined as a person who has been in face to face contact for at least 15 minutes or in the same room for two hours with a case while infectious. In schools, close contacts of cases were usually found either to be students and teachers who shared the same class/classes or extracurricular activities as the case or in their close circle of friends.



# Children are less likely to contract COVID-19 and less likely to transmit to others

At the start of the epidemic, all Municipal Public Health Services (GGDs) conducted source and contact tracing. They kept track how many contacts of a source patient also became infected. The upper graph shows the absolute numbers (infected/non-infected) of infected contacts according to the age of the source patient. The lower graph shows the percentage of contacts that also became infected, by age group of the patient. Source patients in the age groups under 18 years that were monitored here did not infect others.

Source: Children and COVID-19. National Institute for Public Health and the Environment, Ministry of Health, Welfare and Sport, The Netherlands.  
54 households, 123 adults, 116 children  
<https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-covid-19>





Questions?

# CDC Implementation of Mitigation Strategies for Communities with Local COVID-19 Transmission

## Schools/Daycare:

Consider regular health checks (e.g., temperature and respiratory symptom screening) of students, staff, and visitors (if feasible).

## Assisted living facilities, senior living facilities and adult day programs:

Temperature and respiratory symptom screening of attendees, staff, and visitors.

## Workplace:

Consider regular health checks (e.g., temperature and respiratory symptom screening) of staff and visitors entering buildings (if feasible).

<https://www.cdc.gov/coronavirus/2019-ncov/downloads/community-mitigation-strategy.pdf>

# What is the definition of fever for COVID-19?

- The CDC recommends temperature screening but no clear definition
- The CDC has used 100.4°F for COVID-19 fever whereas in Wuhan China, a fever was defined as 99.5°F or above (W.J. Guan, et al. NEJM 2020;382:1708)
  - Note: someone with temp of 100°F would be asymptomatic in the U.S., but symptomatic in China...
- Washington Post: *“A fever is 100.4 in Ohio; it’s 99.5 in Delaware: States, companies write their own rules for temperature screening in a pandemic”*
  - 100.4°F: Georgia, Ohio, Pennsylvania, Virginia
  - 100.0°F: Texas
  - 99.5°F: Delaware, Minnesota
  - 99.2°F: Colorado, but then changed to 100.4°F to match CDC guidelines

<https://www.washingtonpost.com/business/2020/05/15/fever-screening-coronavirus/>

# Thermal Monitoring: is this the “Seatbelt of COVID-19 Screening”?

**Table 1. Comparison of COVID-19 diagnostics based on febrile illness or RT-PCR**

<b>Feature</b>	<b>RT-PCR</b>	<b>Fever</b>
Speed	Slow (1-3 days)	Fast (1-30 seconds)
Complexity	High	Low
Price	High	Low
Specificity	High	Low
Sensitivity	Low/Medium (32-73%)*	Low/High (42-93%)†
Testing capacity/day	Thousands	Millions

\* Based on nasopharyngeal swab testing by RT-PCR(1, 2).

†Fever is observed in children in 42-80% of cases(14) and up to 93% of adults(13).

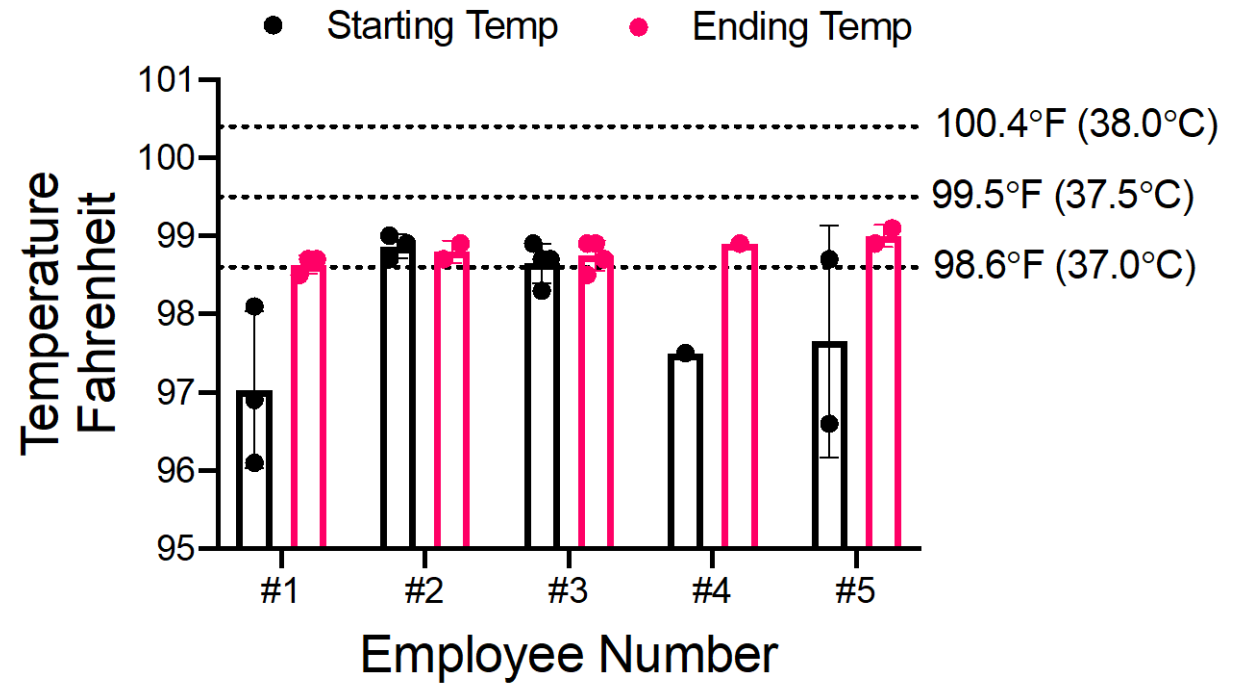
1) W. Wang *et al.*, Detection of SARS-CoV-2 in Different Types of Clinical Specimens. *JAMA*, (2020).

2) Y. Yang *et al.*, Evaluating the accuracy of different respiratory specimens in the laboratory diagnosis and monitoring the viral shedding of 2019-nCoV infections. *medRxiv*, 2020.2002.2011.20021493 (2020).

14) J. F. Ludvigsson, Systematic review of COVID-19 in children shows milder cases and a better prognosis than adults. *Acta Paediatr*, (2020).

13) A. J. Rodriguez-Morales *et al.*, Clinical, laboratory and imaging features of COVID-19: A systematic review and meta-analysis. *Travel Med Infect Dis*, 101623 (2020).

# How reliable are thermal temperature scanners?



- Don't buy cheap - dependable models can be calibrated
- Calibrate the instrument using oral thermometer
- Train users in function, reliability, trouble-shooting
- Note: different populations may have different temperatures (e.g., geriatric population)
- Consider using 99.5°F fever threshold to increase sensitivity for detecting mild/mod fevers
- Record results to verify reliability and if any issues arise seek input/advice from others
- Consider comparing in parallel to routine RT-PCR screening for specific populations

# COVID-19 Vaccines – a brief update

- According to WHO, about 110 COVID-19 vaccines are currently under development
- “Operation Warp Speed” testing 14 vaccines and will develop 4-8 for clinical trials
  - *“The goal is to have 300 million doses available to distribute to Americans by January”*
- Sinovac BPL-inactivated SARS-CoV-2 vaccine protected NHP from challenge
  - Important study because it showed neutralizing antibody responses across 10 virus isolates
  - Q. Gao et al., Development of an inactivated vaccine candidate for SARS-CoV-2, Science 2020
- Oxford recombinant ChAd-Spike vaccine partially (?) protected NHP from challenge
  - Similar to many rAd-Spike vaccines in development but induced only low neutralizing titers (5-40)
  - PREPRINT: N. van Doremalen ChAdOx1 nCoV-19 vaccination prevents SARS-CoV-2 pneumonia in rhesus macaques
- Moderna COVID-19 mRNA vaccine is immunogenic but is it safe enough for routine use?
  - <https://investors.modernatx.com/news-releases/news-release-details/moderna-announces-positive-interim-phase-1-data-its-mrna-vaccine>
- Chinese will finish COVID-19 Phase II rAd-Spike vaccine trial of 2,036 subjects in July
  - [http://www.xinhuanet.com/english/2020-05/15/c\\_139059684.htm](http://www.xinhuanet.com/english/2020-05/15/c_139059684.htm)

# ***“All Teach, All Learn”***

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

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