

COVID-19 Overview
(for OC Schools)

Image source: CDC

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OC health CARE AGENCY

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Objectives

- Provide broad overview of COVID-19
 - Signs/symptoms
 - Transmission
 - Testing
- Introduce key terms/principles needed for communicable disease investigations as they relate to COVID
 - Incubation period
 - Infectious period
 - Isolation
 - Quarantine

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What is a coronavirus?

- Large family of viruses causing infection in humans and wide variety of animal species (host-specific)
- Found worldwide; usually winter and spring where temperate
- Children often infected in early childhood; can get multiple infections in a lifetime
- Generally cause mild to moderate upper respiratory tract illnesses of short duration; some coronaviruses are cause of common cold
- Can cause pneumonia, usually in people with cardiopulmonary disease, compromised immune systems, or the elderly
- SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome) are novel coronaviruses that evolved from animals and caused large outbreaks humans in the past

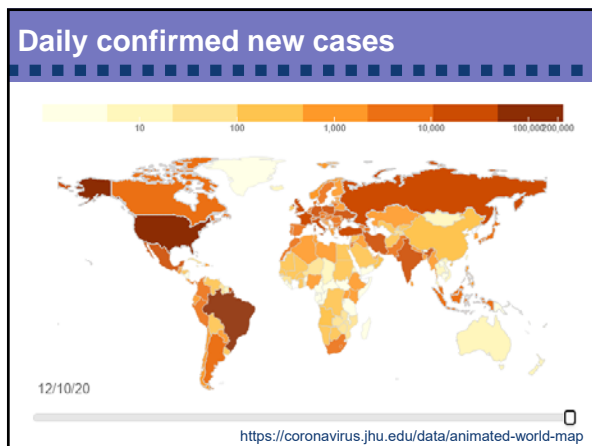
Image: <http://www.cdc.gov/coronavirus/2019-nCoV/photos.html>

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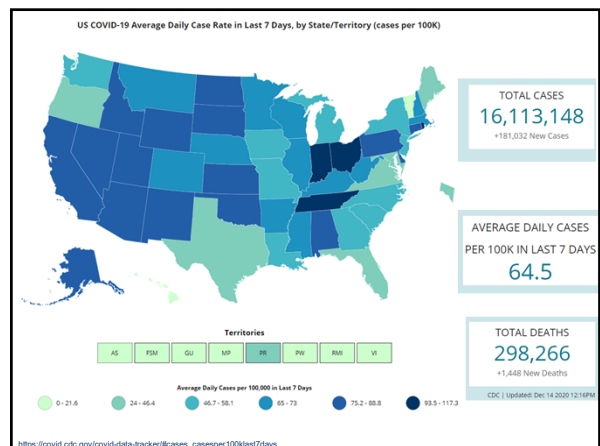
What is this novel coronavirus COVID-19?

- Late December 2019, several health facilities reported clusters of patients with pneumonia of unknown cause linked to seafood and animal market in Wuhan; likely initial animal-to-person spread
- New virus was isolated, similar to SARS-CoV virus.
 - Disease now called COVID-19; virus SARS-CoV-2
- Infections then spread person-person in China
- Cases spread through travel outside of China
- Cases reported in multiple countries now, with sustained (ongoing) community person-person spread

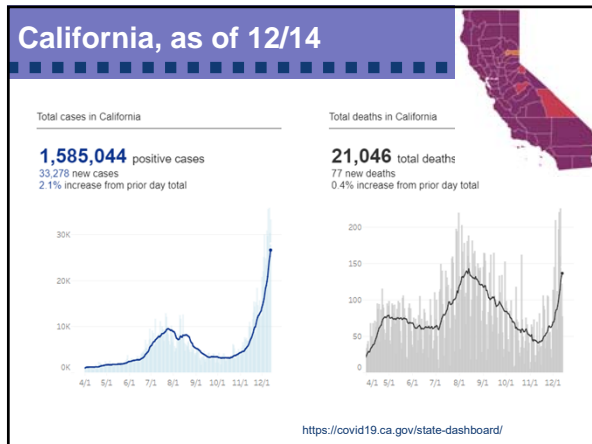
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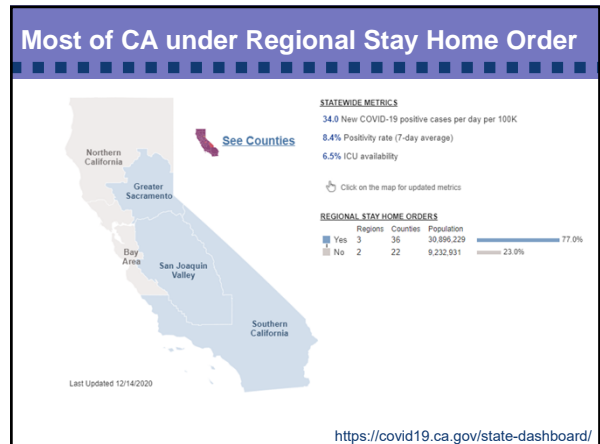
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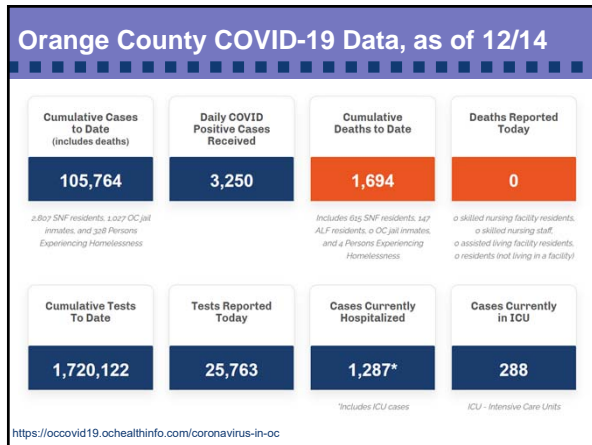
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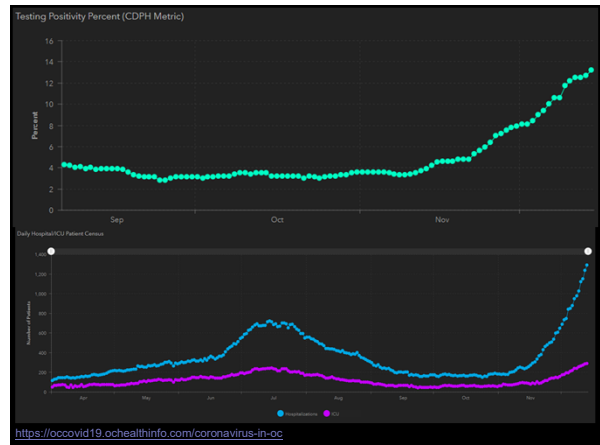
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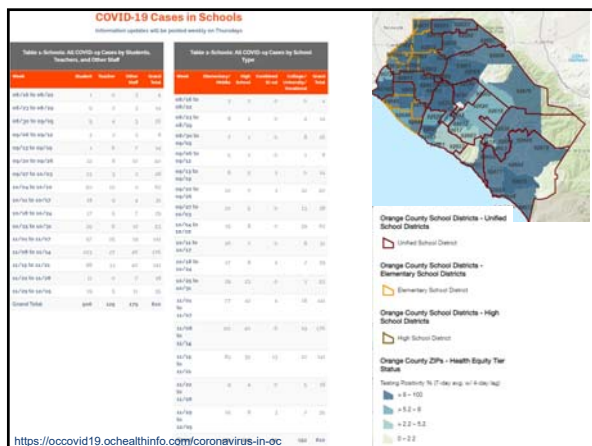
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Transmission

- Spreads very easily from person-to-person
- Most commonly spread during close contact, within 6 feet
 - Mainly through respiratory droplets when a person with COVID-19 coughs, sneezes, sings, talks, or breathes
 - Droplets cause infection when inhaled or deposited in nose or mouth of another individual
 - Also with direct contact
 - People physically near each other, within 6 feet
- Much less commonly spread by airborne transmission
 - Transmissions have occurred within enclosed spaces with inadequate ventilation
- Uncommonly from contact with contaminated surfaces/objects, then touching nose, mouth, eyes
- From people to animals but rarely from animals to people
- Can spread from asymptomatic people

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General COVID-19 prevention measures based on modes of transmission

- Physical distancing
- Face coverings
- Handwashing; hand sanitizer
- Avoiding crowded indoor areas
- Staying home
- Routine cleaning and disinfection

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Transmission dynamics - humans

- Incubation period:** time interval from exposure to a disease-causing agent until when symptoms start
- For COVID, incubation period 2-14 days, usually around 5 days after exposure

The diagram shows a horizontal timeline labeled 'Time in days' with markers at 0, 2, 7, and 14. A vertical purple arrow labeled 'Exposure' points to day 0. A bracket labeled 'Symptom onset' spans from day 2 to day 14. Below the timeline, a blue bracket labeled 'Incubation period' spans from day 0 to day 14. Two green arrows indicate the 'shortest' incubation period (from 0 to 2) and the 'longest' incubation period (from 0 to 14).

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COVID-19: KNOW THE SYMPTOMS

Symptoms of COVID-19 can include the following:

- Cough
- Fever or chills
- Headache
- Fatigue (feeling tired), muscle or body aches
- Shortness of breath or trouble breathing
- Sore throat
- Nausea, vomiting, or diarrhea
- Congestion or runny nose
- New loss of taste or smell

<https://occcovid19.occhealthinfo.com/what-you-should-know-about-covid-19>

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Student Symptom Decision Tree

Screen all students for potential COVID-19 symptoms or exposure

Low-risk: general symptoms	High-risk: red flag symptoms
Fever (≥100.4°F)	Sore throat
Congestion/runny nose	Cough
Nausea/vomiting/diarrhea	Headache
	Difficulty breathing
	Fatigue/muscle or body aches
	Loss of taste/smell

Staff Symptom Decision Tree

High-risk: red flag symptoms	Low-risk: general symptoms
Fever (≥100.4°F)	Congestion/runny nose
Difficulty breathing	Nausea/vomiting/diarrhea
Loss of taste/smell	Sore throat
New onset cough	Headache
Fatigue/muscle or body aches	

Risk levels vary for children
See Student Symptom Decision Tree

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Complications

- Clinical course can range from asymptomatic to mild respiratory symptoms to severe illness and death
- Pneumonia, respiratory failure, liver or kidney injury, heart damage, sepsis, bacterial superinfection, blood clotting
- Multisystem inflammatory syndrome in children (MIS-C) and now MIS-A too

Image Source: NEJM: DOI: 10.1056/NEJMoa2001017

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Risk factors for severe illness

- Risk for severe illness increases with age, with older adults having highest risk
- Certain underlying medical conditions are associated with risk
 - Cancer
 - Chronic kidney, lung, heart disease
 - Weakened immune system
 - Obesity and severe obesity
 - Pregnancy
 - Sickle cell disease
 - Smoking
 - Type 2 diabetes
- Children overall less affected by COVID than adults. Children with underlying medical conditions are at increased risk of severe illness.

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Testing for diagnosis of active COVID infection

- “Viral test” should be used for diagnosis of current infection (*not an antibody test*)
 - Swab of nasopharynx, nose, or throat; or saliva
 - Not** blood test (antibody)
- Nucleic acid amplification test (NAAT) or polymerase chain reaction (PCR)
 - More sensitive than antigen tests
 - Detects viral genetic material, can stay positive for months
- Antigen test - detects viral proteins
 - Less sensitive, negative does not rule out COVID.
 - Faster turn around time.
- Combination tests COVID + Flu, or other respiratory viruses available
 - Can have co-infection with more than one virus at once




Photo source: CDC <https://www.cdc.gov/coronavirus/2019-nCoV/summary.html>

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Antibody test (serology) – not for active infection

- Done from blood
- May be falsely negative early in infection, not useful for diagnosis of current infection
- May be falsely positive due to cross-reactivity with other routine coronaviruses causing upper respiratory infection
- NOT** for diagnosing active infection
- Unclear if serology can provide reliable evidence of immunity

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Definitions: Isolation & Quarantine


CASES

- Isolation:** the separation and restriction of movement of **ill** and potentially infectious persons from those who are healthy to stop the spread of disease
 - In a hospital setting, at home or in a dedicated isolation facility
- Quarantine:** the separation and restriction of movement of persons who, while **not yet ill**, have been exposed to a communicable disease and, therefore, may become infectious and transmit the disease to others
 - Usually at home, but can also be in a dedicated quarantine facility; individual(s) or community/population

CONTACTS

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Health Officer order



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COUNTY OF ORANGE HEALTH OFFICER'S
ORDERS AND STRONG RECOMMENDATIONS
(Revised November 20, 2020)

Order pending update with new quarantine guidance

* Measures usually **voluntary**, but can be **mandatory**; legal authority of Health Officer covers “isolation” and “quarantine”


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10 things you can do to manage your COVID-19 symptoms at home

Self-isolation at home

- Stay home from work and school. Avoid going to other public places. If you must go out, avoid using any kind of public transportation, ride-sharing, or taxis.
- Monitor your symptoms carefully. If your symptoms get worse, call your healthcare provider immediately.
- Get rest and stay hydrated.
- If you have several symptoms, call the healthcare provider ahead of time and tell them that you have or may have COVID-19.
- For medical emergencies, call 911 and notify the dispatch personnel that you have or may have COVID-19.
- Cover your cough and sneeze with a tissue or use the inside of your elbow.
- Wash your hands often with soap and water for at least 20 seconds or clean your hands with an alcohol based hand sanitizer that contains at least 60% alcohol.
- As much as possible, stay in a specific room and avoid being other people in your home. Also, you should use separate bathrooms, if available. If you need to be around other people in or outside of the home, wear a mask.
- Avoid sharing personal items with other people in your household like dishes, towels, and bedding.
- Clean all surfaces that are touched often like counters, tables, desks, and doorknobs. Use household cleaning sprays or wipes according to the label instructions.

- No visitors
- Food brought to door of room where isolating



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Duration of isolation – symptomatic cases

- Case with mild to moderate illness:
 - At least 10 days* have passed since symptom onset **and**
 - At least 24 hours have passed since resolution of fever without the use of fever-reducing medications **and**
 - Other symptoms (e.g., cough, shortness of breath) have improved.
- *Cases with severe or critical illness or who are severely immunocompromised should self-isolate until:
 - At least 10, up to 20 days have passed since symptom onset **and**
 - At least 24 hours have passed since resolution of fever without the use of fever-reducing medications **and**
 - Other symptoms have improved.

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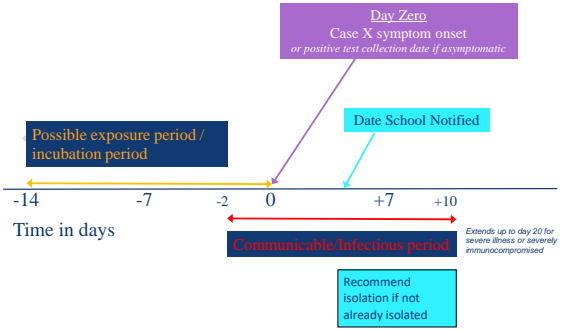
Duration of isolation - asymptomatic cases

- Cases who never develop symptoms, self-isolate for:
 - At least 10 days* have passed since date that first positive test specimen was collected
- *Cases who never develop symptoms who are severely immunocompromised
 - At least 10 and up to 20 days after date of first positive viral diagnostic test
- If asymptomatic when initially tested positive but then develop symptoms, extend isolation based on symptom-based criteria

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html>

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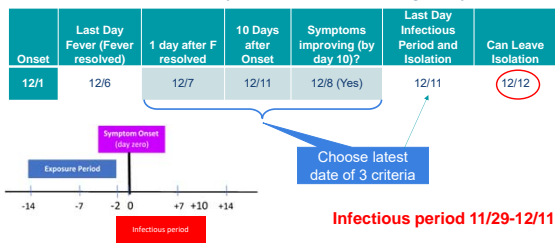
Investigation of a COVID-19 Case (Case X)



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Case 1 – Tested Positive

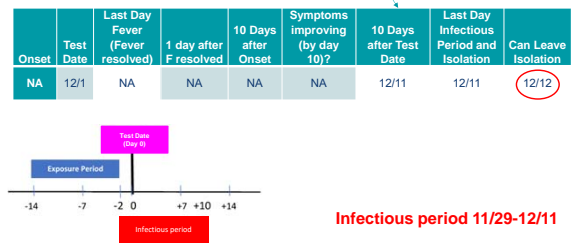
- Symptoms: fever, cough, runny nose, onset 12/1
- Fever resolved day 5
- Cough, runny nose improving day 7
- Infectious from 2 days before onset through day 10



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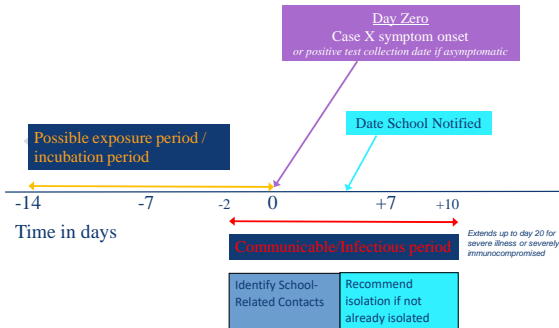
Case 2 – Tested Positive

- Asymptomatic, tested because mom positive
- Infectious from 2 days before specimen collection date of positive test through day 10 after test date



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Investigation of a COVID-19 Case (Case X)



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Close contact definition

- Someone who was within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period, while case was infectious
- Also includes unprotected direct contact with infectious secretions/excretions.

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Contact investigation

Identify all close contacts during case infectious period:

- Symptomatic**
 Start date: 2 days before symptom onset
 Until: When case went into isolation OR until criteria for discontinuation of isolation met
 (For schools, end date for contact elicitation would be last date on campus or at school-related activity during this period)
- Asymptomatic**
 Start date: 2 days before date of specimen collection for positive COVID test (NAAT or antigen)
 Until: When case went into isolation OR until criteria for discontinuation of isolation met
 (For schools, end date for contact elicitation would be last date on campus or at school-related activity during this period)

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Close contacts must all quarantine

COVID-19: QUARANTINE AT HOME
WHAT YOU NEED TO KNOW

- You should quarantine for 14 days after your last exposure to COVID-19, if you:**
 - Had close contact (within 6 feet for at least 15 minutes within a 24-hour period) during the infectious period with someone who has COVID-19 or symptoms of COVID-19.
 - Have been instructed by your health provider (doctor) or local health department that you may have been exposed and need to quarantine.
- While you quarantine at home, you should:**
 - Stay home for at least 10 days after your most recent close exposure.
 - Ask for help to get medications, groceries, etc.
 - If you must go out, avoid close contact with others and wear a mask covering your nose and mouth.
 - Check your temperature twice a day.
 - Separate yourself from others if you develop symptoms, and contact your health provider if you are concerned about your health.
- FREE COVID-19 TESTING:** If you think you or someone in your home has COVID-19, you should get tested. Visit ohioselftest.com to find where you can get tested.
- COVID-19 RESOURCES:** For more information on how to get tested, resources related to job loss, trouble paying rent, or getting medical care, visit ohio.gov.

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Quarantine

- Starts as soon as know exposed to a COVID-19 case
- Continues until 10 days after last exposure to COVID-19 case while case was infectious
 - For school exposures, count 10 days from last date case was on campus (or in school-associated setting) while infectious
 - For home exposures, it will depend on if the case and contact are separating within the home
 - Quarantine period does not change with a negative test result
- Contact should continue to monitor for symptoms through 14 days after last exposure. If symptoms develop, will need to self-isolate and get tested

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Contacts

- Contact A** is a household contact, exposed from beginning of infectious period until case self-isolated in bedroom Day 7 of illness.
- Contact B** is a close contact, hung out with case on Day 1 of illness

Contact	Case Onset	Two Days before Onset	Case's Last Day Infectious Period	Contact's Date of Last Exposure to Case*	10 Days after Last Exposure to Case	Contact Can Leave Quarantine*
A	12/1	11/29	12/11	12/8	12/18	12/19
B	12/1	11/29	12/11	12/2	12/12	12/13

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Immunity

- Long-term immunity after exposure and infection unknown
- Those infected with COVID-19 do have antibody response, but not known if protective and how long
- Other coronaviruses that cause upper respiratory infections have caused antibody response and period of immunity, but immunity wanes and reinfection can occur (generally after about 90 days)
- A person who has had COVID-19 in the past 3 months does not have quarantine again if exposed to another case during this time period
 - If develops symptoms again, should isolate and have illness evaluated

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Reinfection with COVID

- Reinfection has been reported, but is rare
 - Reinfection is when person gets sick, recovers, and later gets infected again
- It is not clear if antibodies produced from infection are protective or if so, how long immunity from COVID infection lasts
- The antibody test should not be used to determine re-infection.
- It is not recommended to retest someone recovering or who has recovered from COVID, within 3 months of diagnosis of previous illness onset, unless new symptoms develop and there is no other alternate diagnosis.

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Resources

- HCA: <https://occcovid19.ochcahealthinfo.com/>
- CDC: <https://www.cdc.gov/coronavirus/index.html>
- CDPH: <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/nCOV2019.aspx>

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HCA COVID Safe Schools OC Program

- 1-800-564-8448 (press option 2)
- CCICOVIDSchools@ochca.com
- Available for consultation and support for complex situations and outbreaks

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Questions?

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