



**CMTS COVID-19 Working Group Webinar:**  
***COVID-19 Testing Strategies for U.S. Merchant Mariners***  
**November 18, 2020**

[https://www.cmts.gov/topics/working\\_group](https://www.cmts.gov/topics/working_group)  
[C19WG@cmts.gov](mailto:C19WG@cmts.gov)

# COVID-19 Testing Strategies for US Merchant Mariners

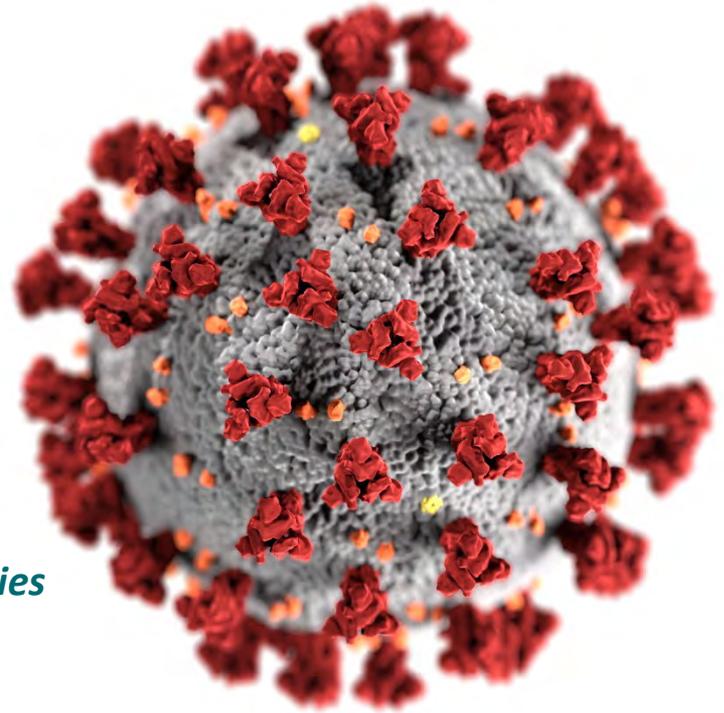
11/18/2020

## Part I: COVID-19 Background

*Samantha Case, MPH*

*Epidemiologist, Center for Maritime Safety and Health Studies*

*National Institute for Occupational Safety and Health*



# Disclaimer

- The information in this presentation is not exhaustive and it is not meant to convey all the critical information that worksites should use when developing plans for continuing operations while coronavirus disease 2019 (COVID-19) outbreaks occur among workers or in the surrounding community.
- For full guidance and information, please consult:
  - CDC's **Interim Guidance for Ships on Managing Suspected or Confirmed Cases of COVID-19:** <https://www.cdc.gov/quarantine/maritime/recommendations-for-ships.html>
  - CDC's **What Maritime Pilots Need to Know about COVID-19:** <https://www.cdc.gov/coronavirus/2019-ncov/community/maritime-pilots.html>
  - CDC's **COVID-19 Information for the Workplace:** [https://www.cdc.gov/niosh/emres/2019\\_ncov\\_default.html](https://www.cdc.gov/niosh/emres/2019_ncov_default.html)
  - CDC's **COVID-19 Information for Businesses and Workplaces** <https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/businesses-employers.html>
- The information in this presentation is current as of November 2, 2020



# Part I: Overview

- Status of COVID-19
  - United States
  - Globally
- COVID-19 Symptoms and Spread
- Protecting Mariners from COVID-19
  - Resources for employers
  - COVID-19 Preparedness, Control, and Response Plan
  - Prevention measures



# CDC Coronavirus (COVID-19) Webpage



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## Coronavirus (COVID-19)

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[Your Health](#)

[Community, Work & School](#)

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[Health Depts](#)

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### Wear a mask

Wearing a mask helps to protect others in your community.

[TIPS ON WEARING A MASK](#)

[HOW TO PROTECT YOURSELF](#)



[SYMPTOMS AND TESTING](#)

[STAY HOME IF SICK](#)



<https://www.cdc.gov/coronavirus/2019-ncov/index.html>

# Status of COVID-19



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## Coronavirus (COVID-19)

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US Cases & Deaths

Cases & Deaths by County

Testing Data in the US

Hospitalization & Emergency Dept

Serology (Antibody) Surveillance

Special Populations

Forecasting

COVIDView Weekly

SARS-CoV-2 Sequencing (SPHERES)

[VIEW ALL](#)

### Wear a mask

Wearing a mask helps to  
in your community.

[TIPS ON WEARING A MASK](#)

[HOW TO PROTECT YOURSELF](#)



[SYMPTOMS AND TESTING](#)

[STAY HOME IF SICK](#)



<https://www.cdc.gov/coronavirus/2019-ncov/index.html>

# COVID-19, United States, Nov. 17, 2020

COVID-19 Case Rate in the US Reported to the CDC, by State/Territory (cases per 100,000)

## Total Cases:

11,136,253

+151,855 new cases

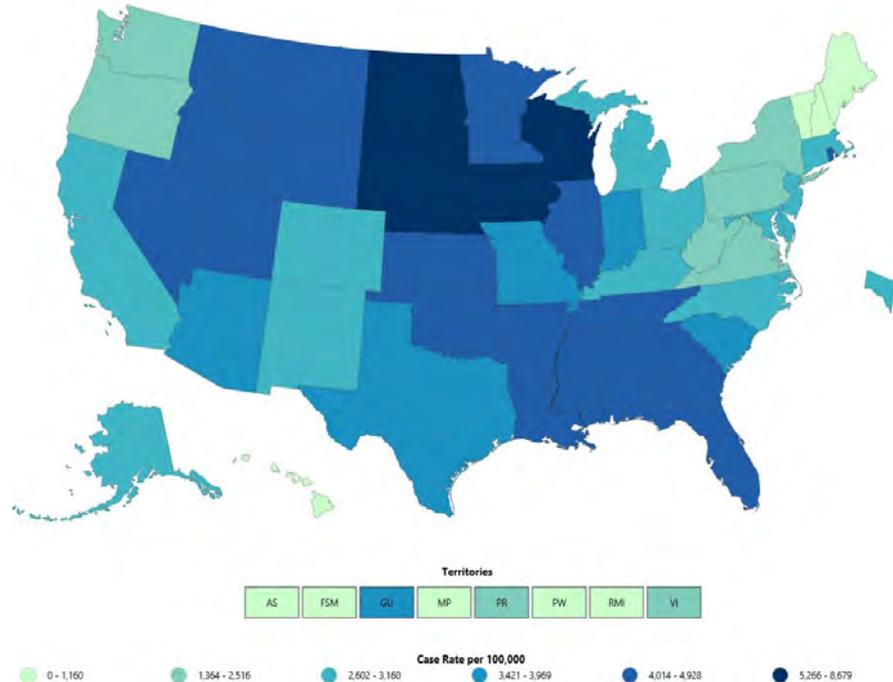
## Cases in Last 7 Days per 100K:

47.5

## Total Deaths:

246,232

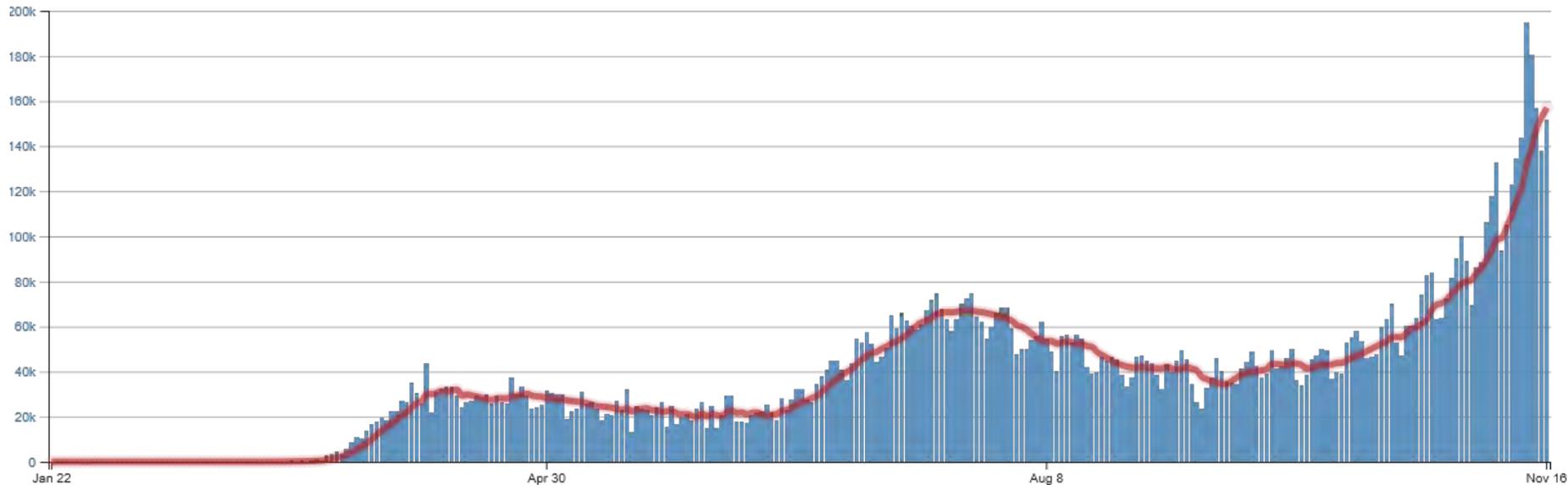
+762 new deaths



[https://covid.cdc.gov/covid-data-tracker/#cases\\_casesper100k](https://covid.cdc.gov/covid-data-tracker/#cases_casesper100k)

# COVID-19 Trends in the United States

Number of COVID-19 Cases Reported to CDC



<https://covid.cdc.gov/covid-data-tracker/#trends>

Updated: Nov. 17, 2020

# COVID-19 Global Situation, Nov. 17, 2020

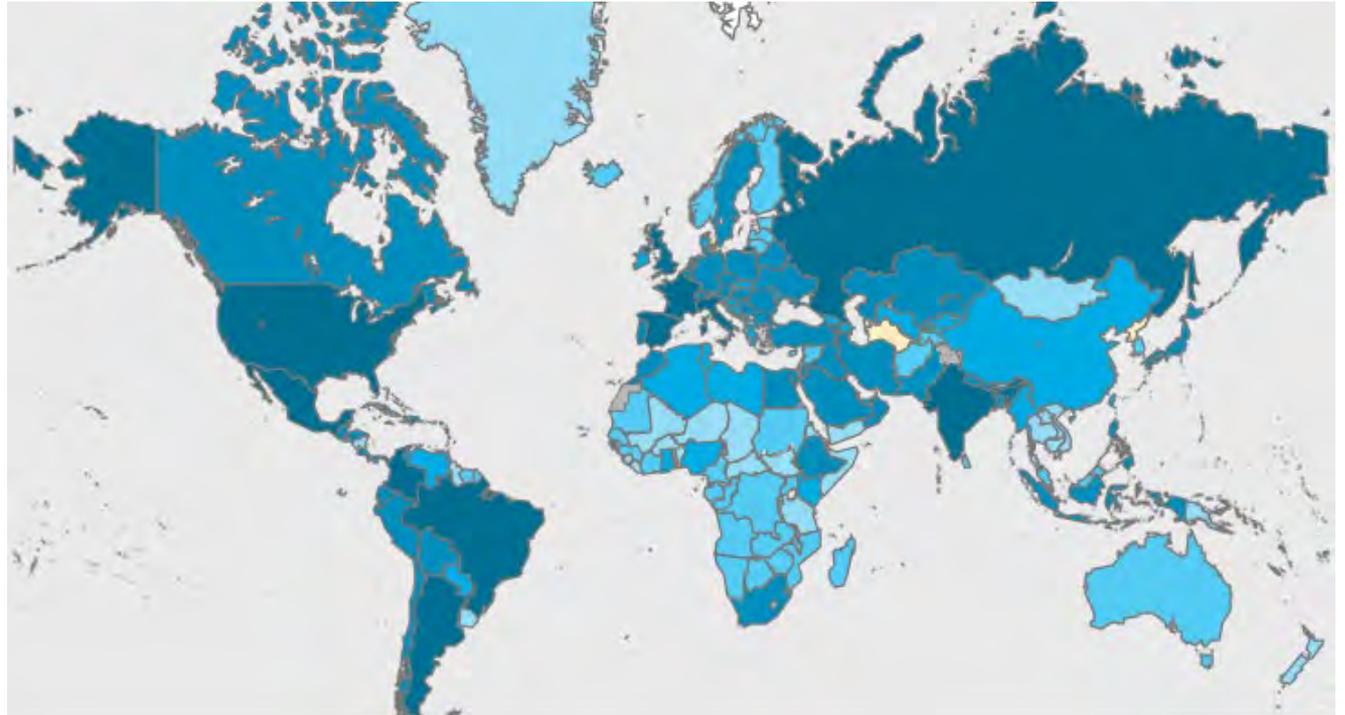
**Total Cases:**

54,771,888

+456,751 new cases

**Total Deaths:**

1,324,249



Source: World Health Organization (<https://covid19.who.int/>)



# COVID-19 Symptoms and Spread



# Symptoms

## Symptoms may include

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

## Symptoms may appear

- 2 to 14 days after exposure to the virus



# How it Spreads



- The virus is thought to spread mainly from person to person.
  - Through respiratory droplets produced when an infected person coughs, sneezes, or talks.
  - Between people who are in close contact with one another (within about 6 feet).
- These droplets can cause infection when inhaled into the nose, mouth, airways, and lungs.
- COVID-19 may be spread by people who are not showing symptoms.



# How it Spreads (con't)

- The virus that causes COVID-19 is spreading very easily and sustainably between people.
- Information from the ongoing COVID-19 pandemic suggests that this virus is spreading more efficiently than influenza, but not as efficiently as measles, which is highly contagious.
- The virus may be spread in other ways
  - It may be possible for a person to get COVID-19 by touching a surface or object that has the virus on it, then touching their own mouth, nose, or possibly their eyes.
  - Under certain circumstances (for example, in enclosed spaces with poor ventilation), COVID-19 can sometimes be spread by airborne transmission.
  - This is not thought to be the main way the virus spreads, but we are still learning more about how this virus spreads.

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>



# Duration of Infectiousness

- Infected persons can spread COVID-19 starting 48 hours (2 days) before the person has any symptoms or tests positive.
- Available data suggests that persons with:
  - More severe illness or severe immunocompromise likely remain infectious no longer than 20 days after the date of their first positive viral test for COVID-19.
  - Mild to moderate COVID-19 remain infectious no longer than 10 days after symptom onset, resolution of fever for at least 24 hours without the use of fever-reducing medications, and with improvement of other symptoms.
  - No symptoms likely remain infectious no longer than 10 days after the date of their first positive viral test for COVID-19.



# Protecting Mariners From COVID-19



# CDC Coronavirus (COVID-19) Webpage

## Coronavirus (COVID-19)

Your Health 

**Community, Work & School** 

Healthcare Workers & Labs 

Health Depts 

Cases & Data 

More 

Cleaning & Disinfecting

Schools & Child Care

Colleges & Universities

**Businesses & Workplaces**

Worker Safety & Support

Parks & Recreational Facilities

Gatherings & Community Events

Health Equity

Tribal Communities

[VIEW ALL](#) 

[HOW TO PROTECT YOURSELF](#) 

[SYMPTOMS AND TESTING](#)

[STAY HOME IF SICK](#)

<https://www.cdc.gov/coronavirus/2019-ncov/index.html>



# CDC Guidance for Employers and Workers

COMMUNITY, WORK & SCHOOL

## Businesses and Workplaces

Plan, Prepare, and Respond

Updated Sept. 2, 2020

Languages ▾ Print



### For Employers and Businesses

Guidance and strategies to help prevent workplace exposures to COVID-19

Workplace Guidance

### Employees Returning to Work

For employees considering or preparing for a return to the workplace

Returning to Work



<https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/businesses-employers.html>

# CDC Interim Guidance for Ships

Interim Guidance for Ships on Managing Suspected or Confirmed Cases of Coronavirus Disease 2019 (COVID-19)



## Purpose

This document provides guidance for preventing the spread of COVID-19 during and after a voyage, including personal protective measures, management of sick or exposed persons on board, reporting suspected or [confirmed](#) cases, and cleaning and disinfection recommendations for common areas on the ship and areas previously occupied by individuals with suspected or [confirmed](#) COVID-19.

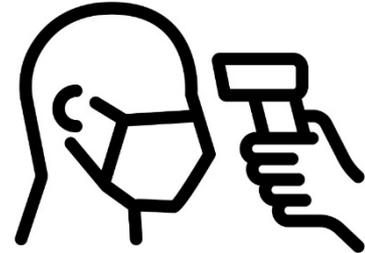
CDC will update this interim guidance for ships as needed and as additional information becomes available.

<https://www.cdc.gov/quarantine/maritime/recommendations-for-ships.html>



# COVID-19 Preparedness, Response, and Control Plan

- Develop and update a plan that:
  - Is specific to your company and vessels
  - Identifies potential COVID-19 exposures
  - Includes control measures
- The plan should include:
  - Training crew on COVID-19 prevention and mitigation
  - Onboard monitoring for signs and symptoms of COVID-19
  - Screening during embarking/disembarking
  - Onboard isolation, quarantine, and social distancing



<https://www.cdc.gov/quarantine/maritime/recommendations-for-ships.html>

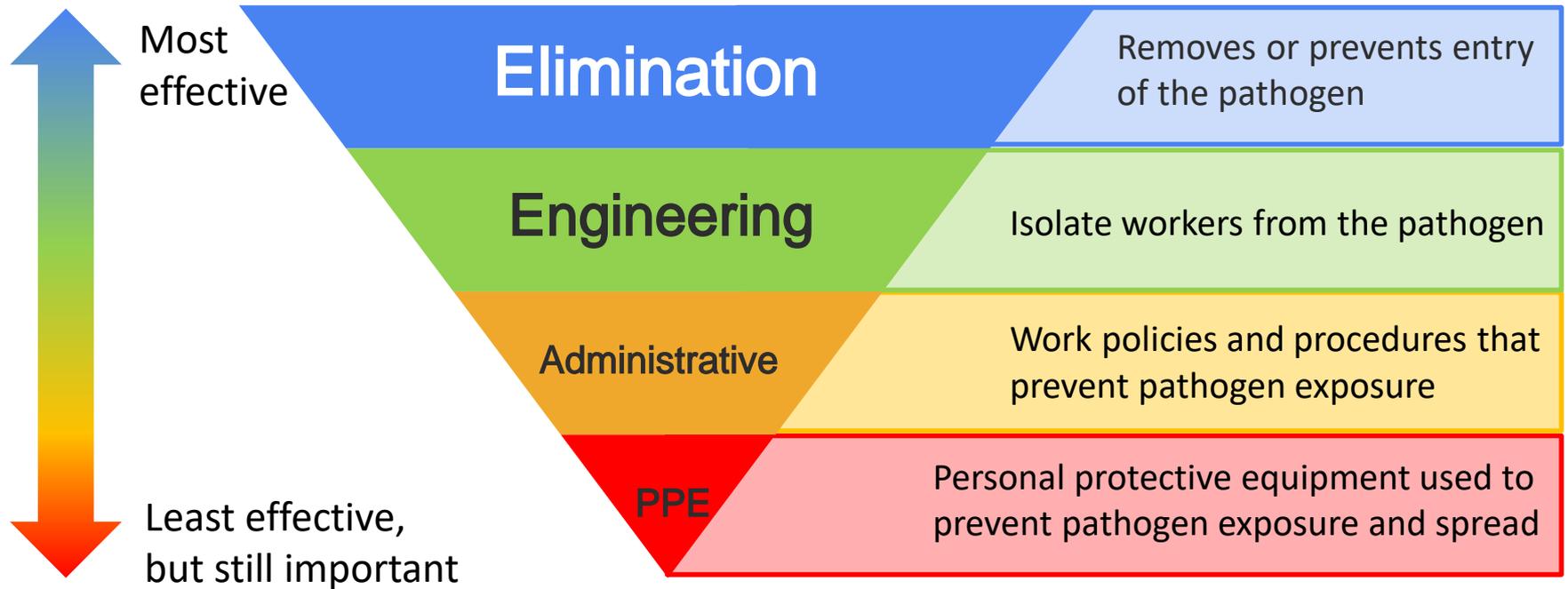


# COVID-19 Preparedness, Response, and Control Plan

- The plan should include (cont'd):
  - Adequate medical staffing (e.g., telemedicine providers).
  - Adequate personal protective equipment (PPE), oxygen, and other supplies.
  - COVID-19 outbreak management and response information.
  - Medical arrangements for evaluation and hospitalization.
  - A system to notify respective national, state, and local public health authorities.
  - COVID-19 testing.
- For more information on preventing and reducing transmission of COVID-19, see CDC's [Interim Guidance for Businesses and Employers Responding to COVID-19](#)



# Develop Hazard Controls Using the Hierarchy of Controls



# Prevention Measures for Ship Operators

- Assign crew to single-occupancy cabins with a private bathroom.
- Implement social/physical distancing.
- Instruct persons to wear a mask when outside their cabins.
- Eliminate self-serve dining options.
- Promote proper hand hygiene and cough etiquette.
- Ensure hand hygiene facilities are well-stocked.
- Discourage handshaking.
- Minimize shore leave.
- Educate that avoiding smoking products *may* reduce risk of infection due to frequent touching of mouth and face.



# Additional Resources

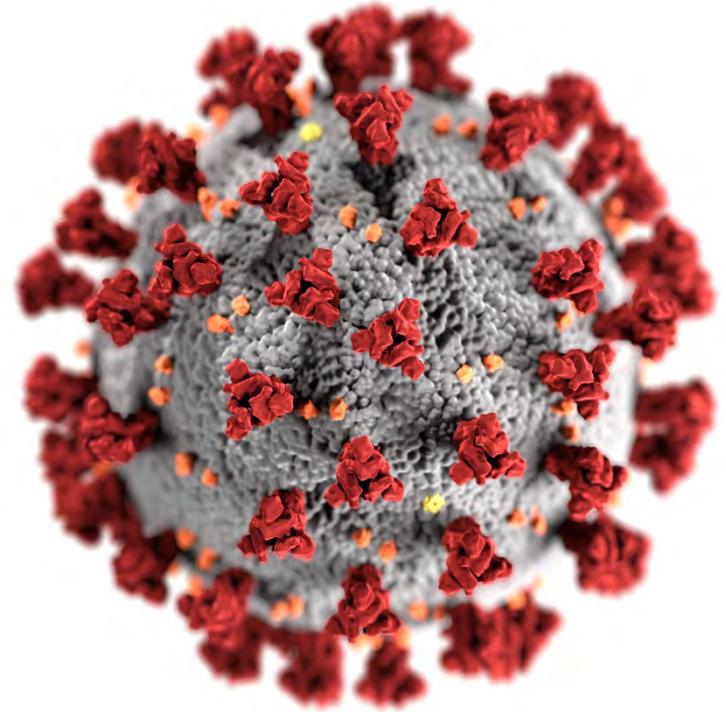
- [CDC COVID-19 Website](#)
- [CDC Interim Guidance for Businesses and Employers \(COVID-19\)](#)
- [CDC Tools for Cross-Cultural Communication and Language Access](#)
- [NIOSH COVID-19 Workplace Safety and Health Topic](#)
- [USCG Marine Safety Information Bulletin 2020](#)
- [OSHA Guidelines on Preparing Workplaces for COVID-19](#)
- [WHO Operational Considerations for Managing COVID-19 Cases/Outbreaks on Board Ships](#)
- For Questions Related to this Webinar: [EIDInfoTech@cdc.gov](mailto:EIDInfoTech@cdc.gov)



# COVID-19 Testing Strategies for U.S. Merchant Mariners 11/18/2020

## Part II: COVID-19 Testing

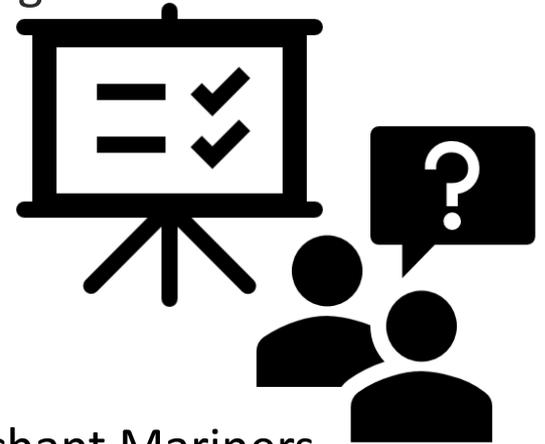
*Kara Tardivel, MD, MPH  
Maritime Unit, Co-lead  
Division of Global Migration & Quarantine  
Captain, US Public Health Service*



# Learning Objectives

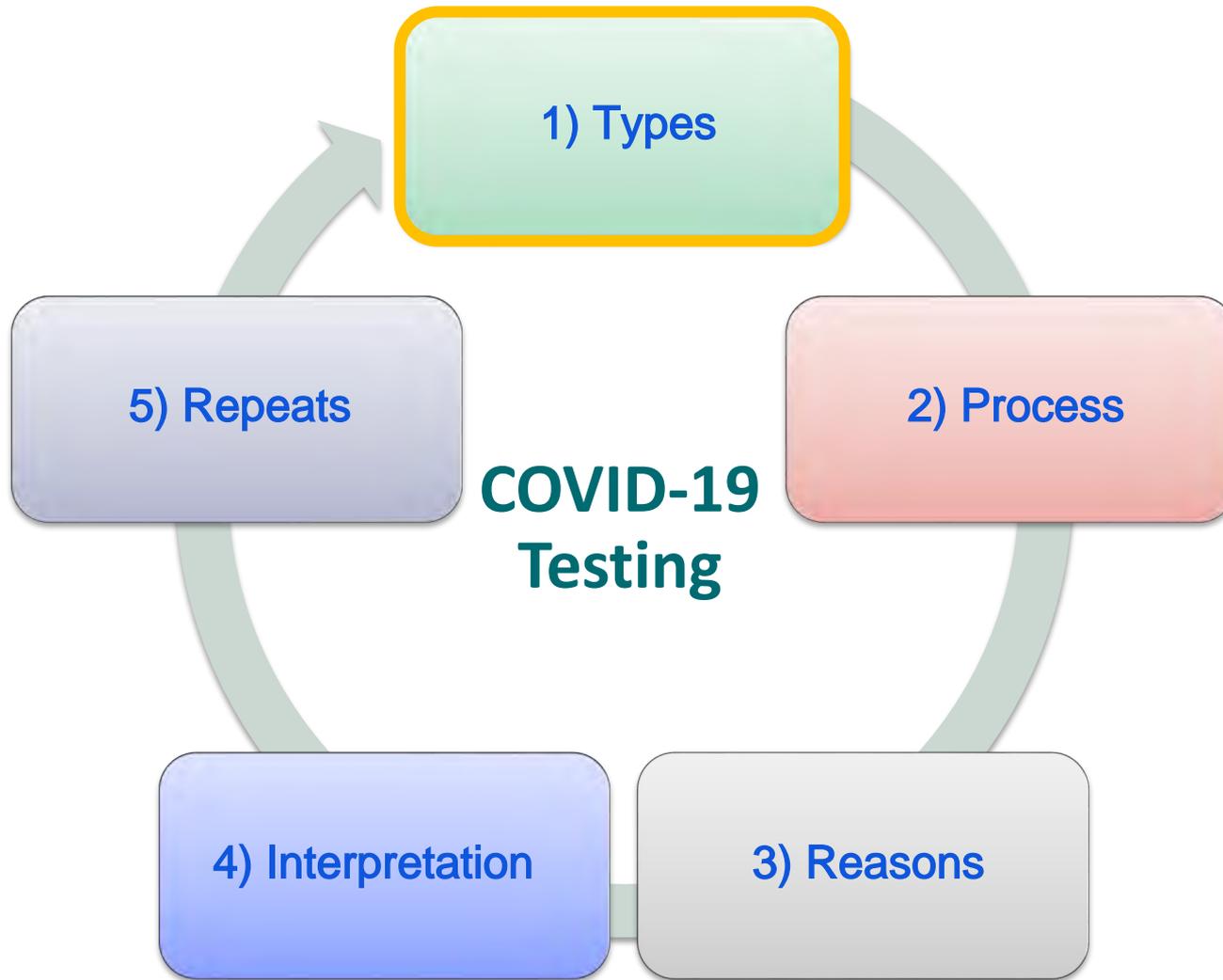
After participating in this webinar, participants will be able to:

1. **Understand** the following about COVID-19 testing:
  - Types of testing,
  - Process of testing,
  - Reasons for testing,
  - How best to interpret test results, and
  - Repeat testing for COVID-19 test results
2. **List** CDC testing recommendations for U.S. Merchant Mariners
3. **Locate** additional COVID-19 resources for crew members



# COVID-19 Testing



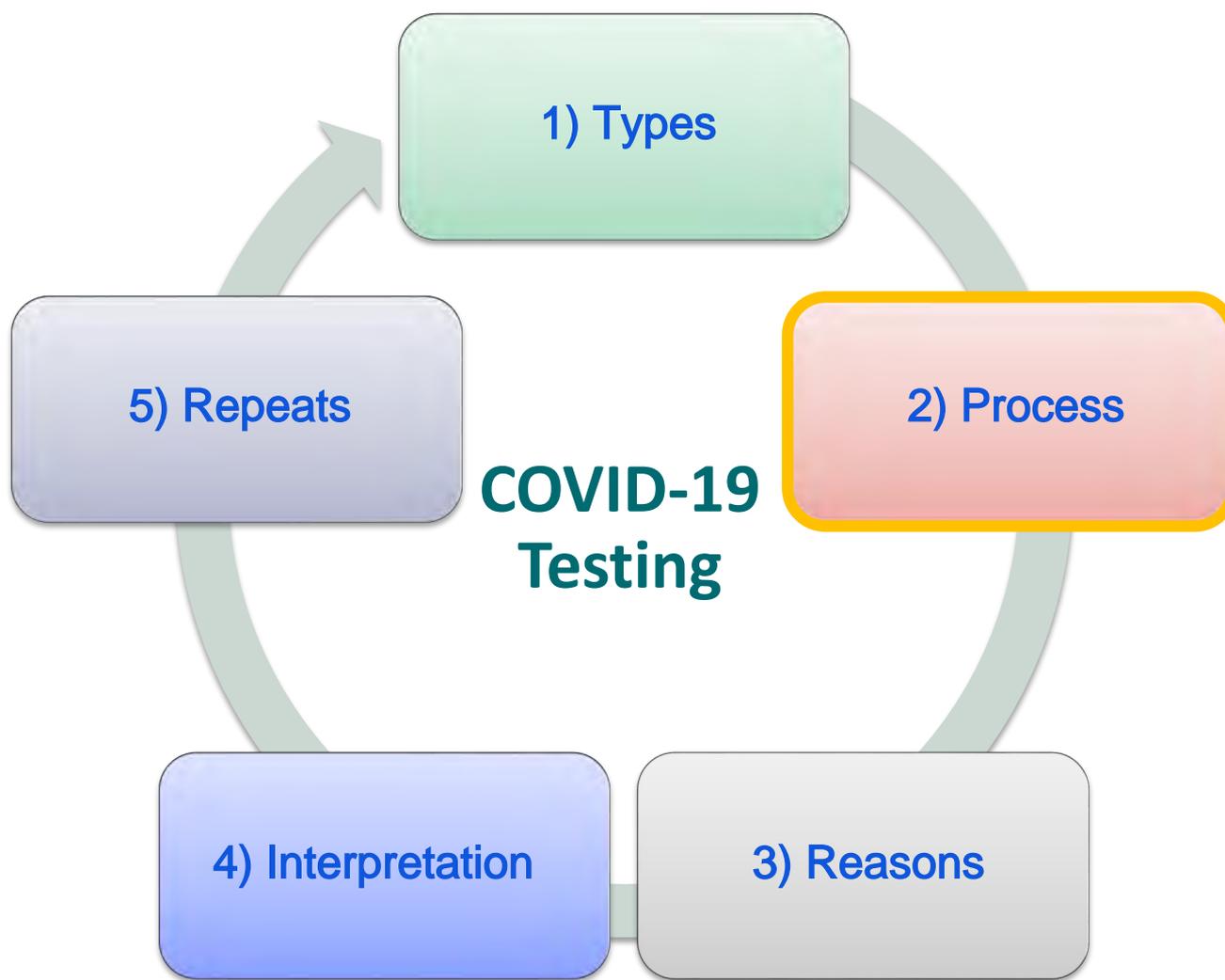


# Types of COVID-19 Tests

Type of Test		Reason for Test	
Viral (respiratory or saliva)	NAAT (e.g., RT-PCR)*	<i>Diagnose</i> infection if: 1) symptomatic or 2) identified contact	<i>Screen</i> for infection if: 1) asymptomatic and 2) <u>not</u> identified contact
	Antigen (i.e., rapid)		
Antibody (blood sample)	Blood draw vs. Fingerstick (i.e., rapid)	<u>Not</u> recommended for making diagnosis!	<i>Surveillance</i> of populations

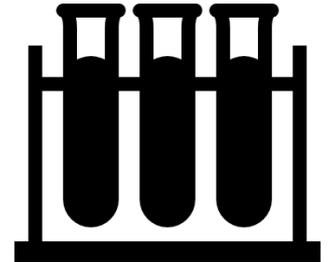


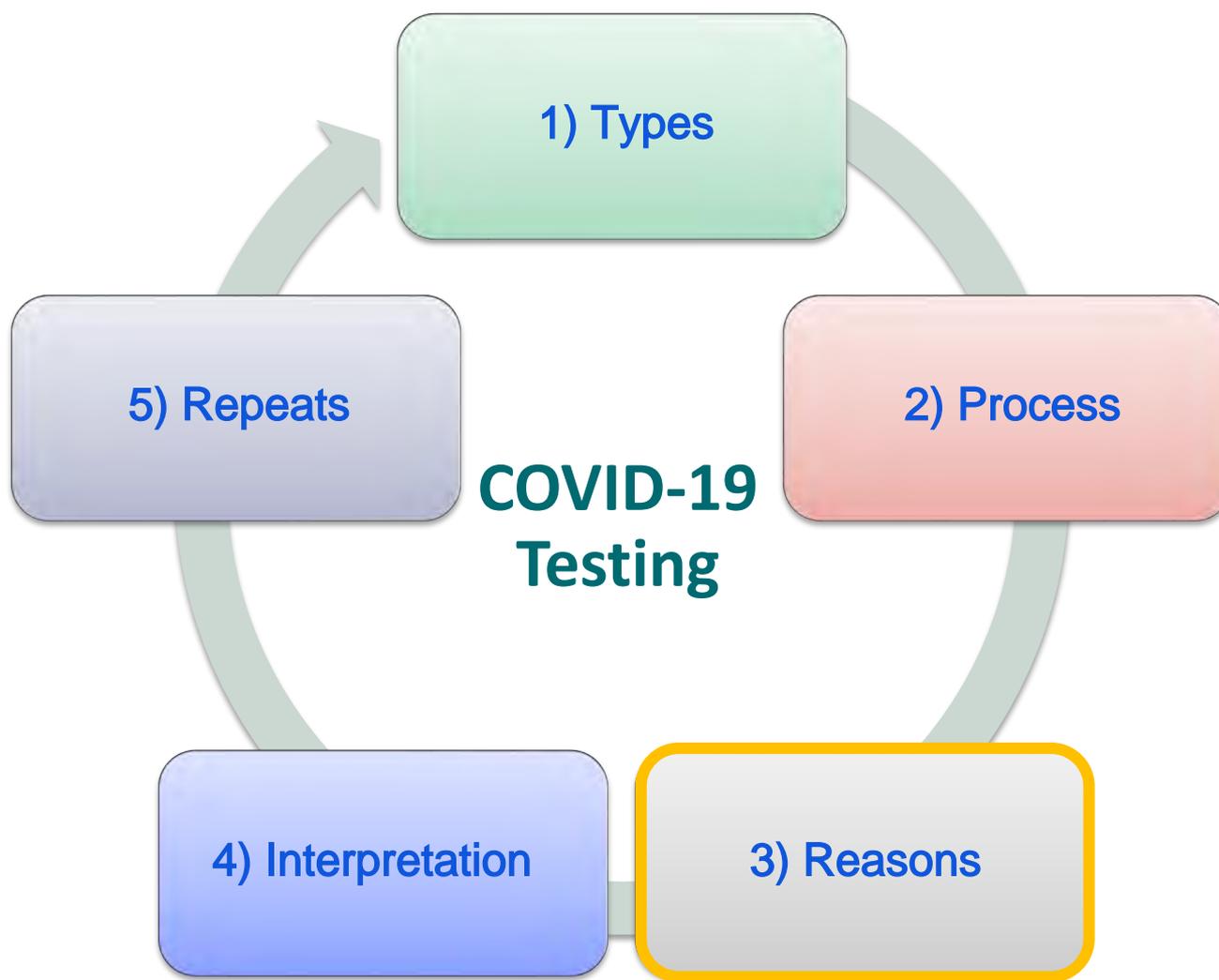
\*molecular testing: NAAT = nucleic acid amplification test; RT-PCR = reverse transcription polymerase chain reaction



# Processing of Viral Tests for COVID-19

- **Laboratory facility**
  - **Receives** specimens collected by clinicians
  - Hospital, commercial, public health
  - High throughput potential (i.e., **mass testing**)
  - Result times **variable** (depends on supply vs. demand)
- **Point-of-care** (i.e., rapid)
  - **Collects and processes** specimens
  - Clinics, pharmacies, nursing homes, drive-through sites
  - Potential for results in **minutes!**





# Reasons for Viral Testing

## 1) Diagnostic testing to identify infection in...

- Individuals with signs or symptoms of COVID-19, or
- Asymptomatic/pre-symptomatic individuals with recent known or suspected exposure to COVID-19 to control transmission

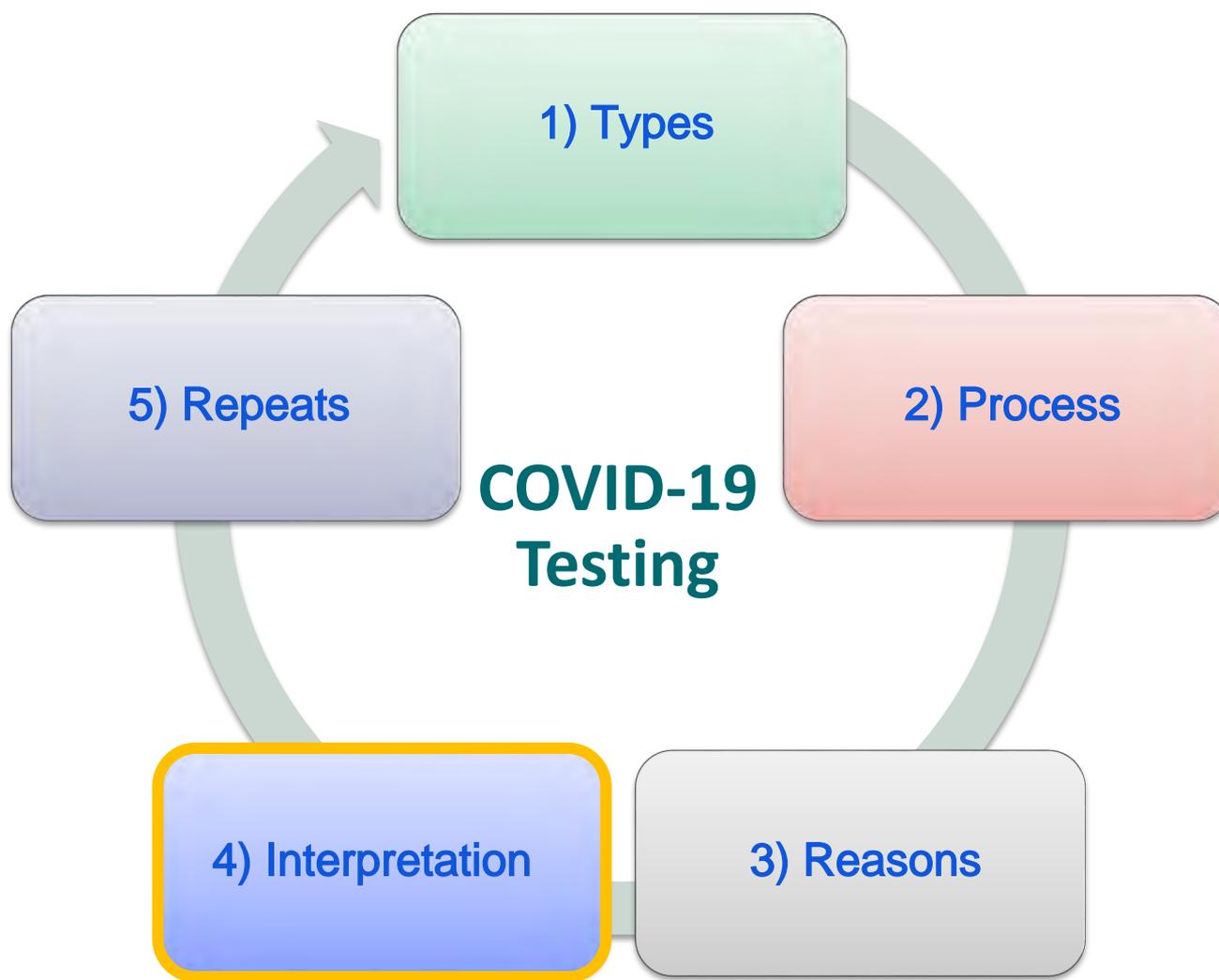


## 2) Screening testing to identify infection in...

- Asymptomatic individuals without known or suspected exposure to COVID-19 for early identification in special settings (e.g., nursing homes, prisons, food manufacturing)
  - Performed to identify persons who may be contagious so that measures can be taken to prevent further transmission



\*CDC no longer recommends testing to determine resolution of infection in non-severe clinical scenarios



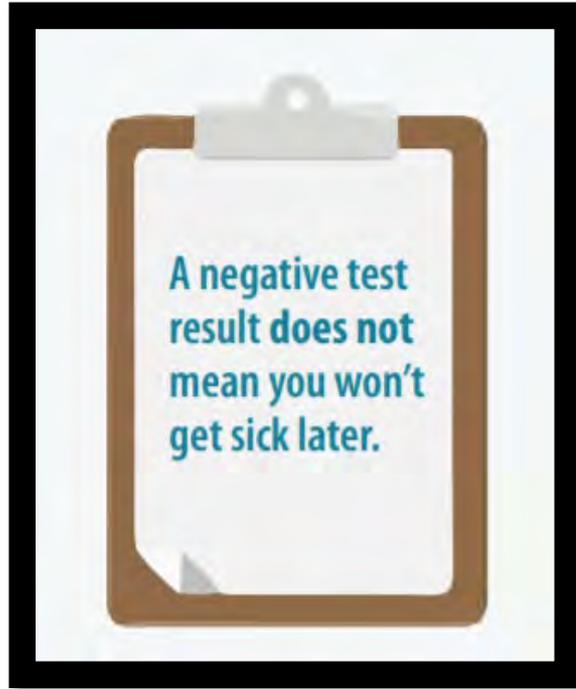
# Interpretation of Viral Test Results



- “Positive” =
  - on the day of specimen collection, evidence of COVID-19 was detected
- “Negative” =
  - on the day of specimen collection, evidence of COVID-19 was *not* detected\*

*\* If a high suspicion for infection (e.g., symptomatic or close contact), a negative antigen result should prompt a confirmatory testing using NAAT and a negative NAAT result could be repeated*

# Interpretation of Viral Tests for COVID-19 (during 2–14-day incubation period post exposure)

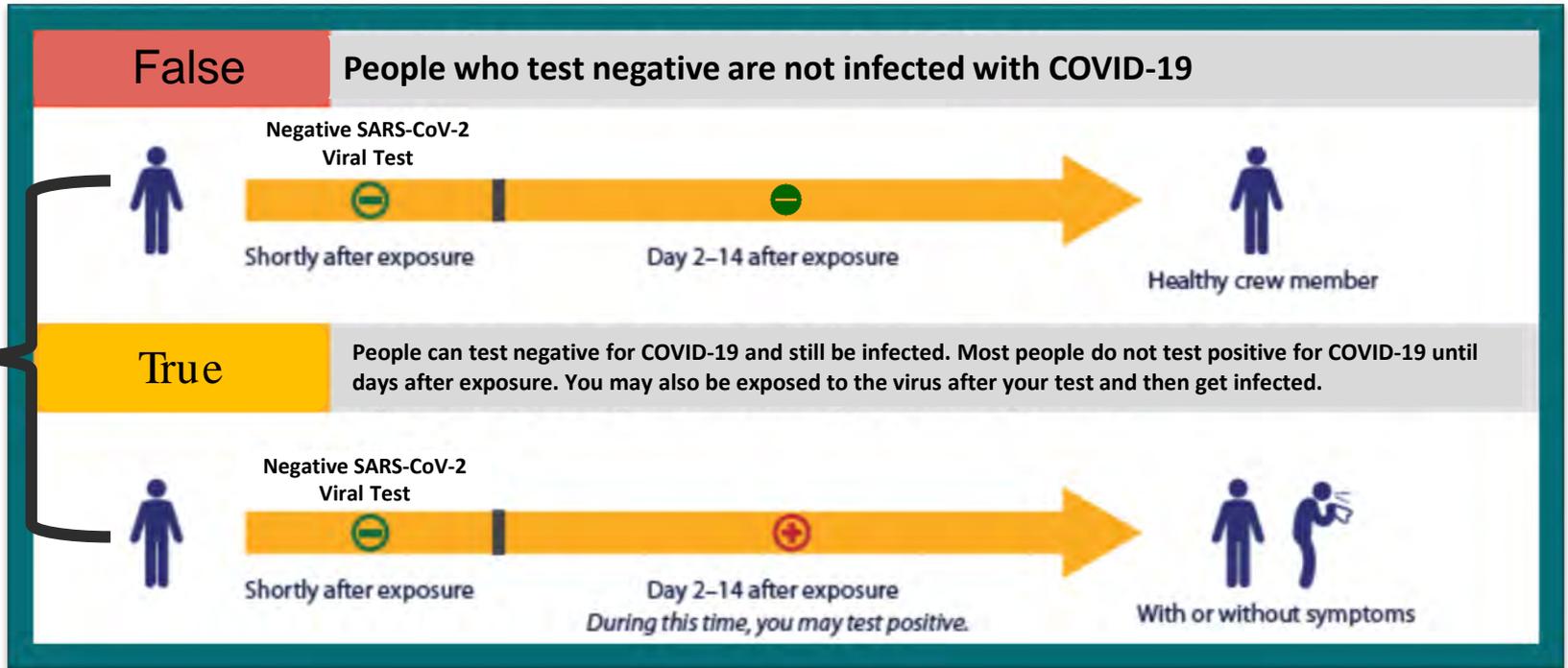


**“Negative”** test result means...  
on the day of specimen collection,  
evidence of COVID-19 was *not* detected\*

**“Negative”** test result does *not* mean...  
“you are not infected with the virus  
that causes COVID-19”

\* If a high suspicion for infection (e.g., symptomatic or close contact), a negative antigen result should prompt a confirmatory testing using NAAT and a negative NAAT result could be repeated

# Interpretation of Viral Testing: True vs. False



# Interpretation of Viral Testing: True vs. False

False



If you do not have symptoms, you do not need to get tested.

True



You can be infected with COVID-19 and spread it to others even if you do not have symptoms.



People with symptoms of COVID-19



Close contacts of people with COVID-19 (symptoms or test results)



People onboard without symptoms (screening tests for monitoring disease onboard)

# COVID-19: Quarantine vs. Isolation

**QUARANTINE** keeps someone who was in close contact with someone who has COVID-19 away from others.



**If you had close contact with a person who has COVID-19 (i.e., exposed)**

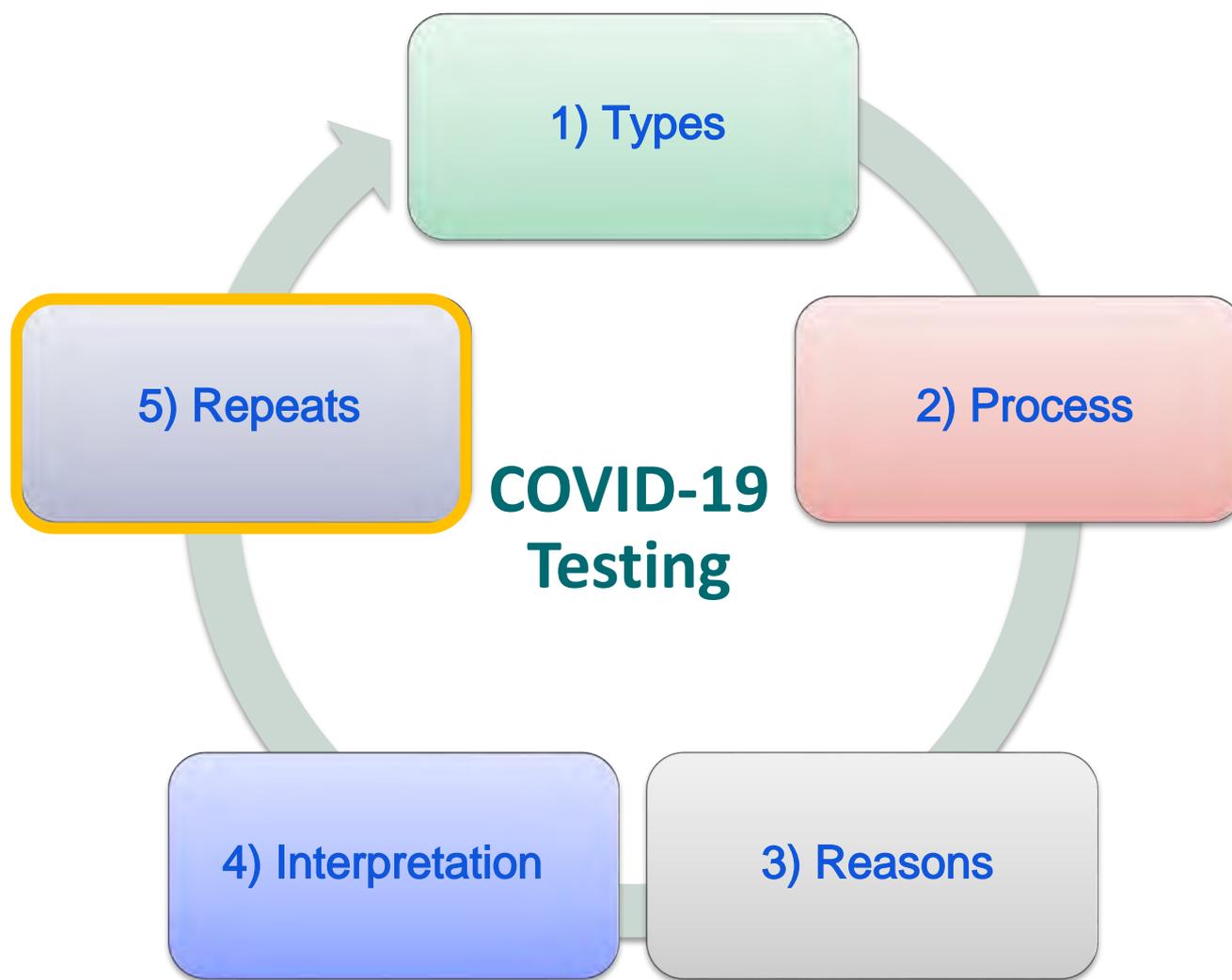
**ISOLATION** keeps someone who is sick or tested positive for COVID-19 without symptoms away from others, even in their own home.



**If you are sick and think or know you have COVID-19**

# Viral Tests Interpretation: It matters who you're testing

<i>Population</i>	<i>Result</i>	<i>Interpretation &amp; Disposition</i>
 People with symptoms of COVID-19	<b>Positive</b>	<i>Person likely has COVID-19; isolation needed</i>
	<b>Negative</b>	<i>Manage as if COVID-19 &amp; isolate (consider re-testing)</i>
 Close contacts of people with symptoms of COVID-19	<b>Positive</b>	<i>Person likely has COVID-19; isolation needed</i>
	<b>Negative</b>	<i>Person may still have COVID-19; quarantine needed</i>
 People onboard without symptoms (screening tests for monitoring disease)	<b>Positive</b>	<i>Person may have COVID-19 depending on test type &amp; setting; isolation still needed (health officials may recommend confirmation with NAAT if antigen test)</i>
	<b>Negative</b>	<i>Depends on test type &amp; setting (Remember: incubation period 2–14 days)</i>



# Repeating Viral Tests for COVID-19



## Need to repeat a test that was “positive”

- Repeat testing no longer recommended for non-infectiousness
- Potential for “persistent positives” with NAAT (i.e., dead bugs)
- “False positive” risk varies by test type (NAAT vs. antigen) & manufacturer
- “False positives” rare if patient symptomatic or exposed
- “False positive” potential if no symptoms & not exposed

## Need to repeat a test that was “negative”

- Potential for repeat of negatives:
  - Sick person with negative antigen (NAAT recommended)
  - Contact tested too early (incubation period 2–14 days)
- **More false negatives than false positives**



# CDC Recommendations for U.S. Merchant Mariners



# CDC Recommendations for Non-cruise Ships

## Pre-Boarding Procedures

1. Screening for:
  - a) history of COVID-19 exposure in past 14 days
  - b) symptoms of COVID-19 (questioning and observation)
  - c) temperature (fever  $\geq 100.4\text{F}$  [ $38\text{C}$ ])
2. Deny boarding if any of above 3 criteria met
3. Quarantining crew for 14 days
  - Immediately before or upon boarding, or
  - Upon identification of crew case of COVID-19



# Non-cruise Ship Recommendations for COVID-19 Cases

All crew on non-cruise ships = close contacts  
(i.e., all crew are considered exposed)

If 1 case identified, then...

...it's an "all for one" strategy  
with remaining crew



## Options for Managing Non-Cruise Ships with One or More Confirmed Cases of COVID-19

The following table provides management options for non-cruise ships and their crew after a confirmed case of COVID-19 is identified. Decisions regarding the best option for managing an individual ship and exposed crew on board should take into account various factors (e.g., the industry, seaport location, itinerary, and the availability of alternate crew).

	Recommendations for Non-Cruise Ships and Crew
<b>Option 1: Crew Change Out</b>	<ul style="list-style-type: none"><li>• All crew disembark for 14-day shoreside quarantine*</li><li>• Private company disinfects ship, then</li><li>• New crew embark ship to resume operations</li></ul>
<b>Option 2: Working Quarantine</b>	<ul style="list-style-type: none"><li>• Onboard 14-day "working" quarantine<sup>o</sup> of all crew without signs or symptoms<ul style="list-style-type: none"><li>• Strict social distancing</li><li>• Mandatory facemask or <a href="#">cloth face covering</a></li></ul></li><li>• Crew or private company disinfects ship</li><li>• Ship operations resumed with ship remaining close to shore (for potential medical evacuations of crew)</li><li>• Any symptomatic crew to be isolated in their cabins<sup>!</sup></li></ul>
<b>Option 3: Temporarily Discontinue Operations</b>	<ul style="list-style-type: none"><li>• Onboard 14-day quarantine of non-essential crew</li><li>• "Working" quarantine<sup>o</sup> of essential crew without signs or symptoms<ul style="list-style-type: none"><li>• Strict social distancing</li><li>• Mandatory facemask or <a href="#">cloth face covering</a></li></ul></li><li>• Crew or private company disinfects ship</li><li>• Ship operations suspended (i.e., ship stays in anchorage)</li><li>• Any symptomatic crew to be isolated in their cabins<sup>!</sup></li></ul>

# Reporting Illness or Death Onboard to CDC

***U.S. regulations require master of a ship destined for U.S. port of entry to report any death or illness among the ship's passengers or crew to the CDC quarantine station at or nearest the U.S. port of arrival.***

(includes persons who have disembarked or have been removed from the ship due to illness or death)

- For ships arriving in the U.S., includes all deaths or illnesses within 15 days prior to arrival
- For ships that left the U.S. and will be returning to U.S. port during the same voyage, includes all deaths or illnesses within 15 days of departure

CDC quarantine station contact information:

<https://www.cdc.gov/quarantine/quarantinestationcontactlistfull.html>



## Illness Type and Signs and Symptoms to Report by Federal Regulations

Required: Death/Disease/Symptoms to report

Complete Sections 1-4 of the [Maritime Conveyance Illness or Death Investigation Form](#) [PDF - 4 pages]

- **Death**
- **Quarantinable Diseases** (both suspected or confirmed) listed in the [President's Executive Order](#): cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, viral hemorrhagic fevers, severe acute respiratory syndromes, and novel influenza viruses.
- **Signs and symptoms of serious disease or of public health interest included in the Federal Regulations:**
  - (A) Fever (has a measured temperature of 100.4 °F [38 °C] or greater; or feels warm to the touch; or gives a history of feeling feverish) **accompanied by one or more of the following:**
    - skin rash,
    - difficulty breathing or suspected or confirmed pneumonia,
    - persistent cough or cough with bloody sputum,
    - decreased consciousness or confusion of recent onset,
    - new unexplained bruising or bleeding (without previous injury),
    - persistent vomiting (other than sea sickness),
    - headache with stiff neck;
  - OR
  - (B) Fever that has persisted for more than 48 hours;
  - OR
  - (C) Acute gastroenteritis, which means either:
    - diarrhea, defined as three or more episodes of loose stools in a 24-hour period or what is above normal for the individual, or
    - vomiting accompanied by one or more of the following: one or more episodes of loose stools in a 24-hour period, abdominal cramps, headache, muscle aches, or fever (temperature of 100.4 °F [38 °C] or greater);
  - OR
  - (D) Symptoms or other indications of communicable disease, as the Director may announce through posting of a notice in the [Federal Register](#). (CDC will notify partners in applicable industries as well as posting on the CDC website).

\* Medical staff should consider someone to have a fever if the ill person feels warm to the touch, gives a history of feeling feverish, or has an actual measured temperature of **100.4 °F [38 °C]** or greater.

# Example of USCG & CDC Collaboration: COTP Order



October 4, 2020

1100 hrs = Arrival to Port LA  
• from Vancouver, BC  
• 1 crew with cough



1200 hrs = Sick crew  
transported to Urgent Care



1800 hrs = Lab results  
"positive" COVID-19



October 5, 2020 @ 0400 hrs  
Departing for China



# Additional CDC Resources on COVID-19



# Crew Webpage: Coping with Stress during COVID-19

## Coping with Stress Aboard a Vessel During COVID-19

Be Informed. Make Healthy Choices. Connect with Others.

Updated May 11, 2020

Languages ▾

Print



### Pandemics Can Be Stressful

Coping with stress in a healthy way will make you, the people you care about and your fellow crew stronger. You may experience increased stress during this pandemic. Fear and anxiety about a new disease and what could happen can be overwhelming and cause strong emotions. Learn more about healthy ways to cope with stress.

## Take Care of your Mental Health

**Be Informed**—facts about COVID-19.

**Make Healthy Choices**—tips for managing stress onboard a vessel.

**Connect with Others**—tips for making social connections during COVID-19.

How Can I Protect Myself from COVID-19?

Mental Health Resources

FAQs (Frequently Asked Questions) — info about mental health concerns while aboard a vessel.

### Ship Status



Information about your ship's status and what it means.

### Ship Guidance



Cruise Ship Guidance During the Period of the No Sail Order  
Cargo Ship Guidance ##

### Disembarkation



What to know if considering disembarkation

- Cruise Ships
- Other Vessels

# Additional CDC COVID-19 Resources

- **COVID-19 Testing**

<https://www.cdc.gov/coronavirus/2019-ncov/testing/index.html>

- **COVID-19 Testing Overview**

<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/testing.html>

- **Test for Current Infection**

<https://www.cdc.gov/coronavirus/2019-ncov/testing/diagnostic-testing.html>

- **COVID-19 Contact Tracing**

<https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/contact-tracing.html>

- **Interim Guidance for Ships on Managing Suspected or Confirmed Cases of COVID-19**

<https://www.cdc.gov/quarantine/maritime/recommendations-for-ships.html>

- **Maritime Resources**

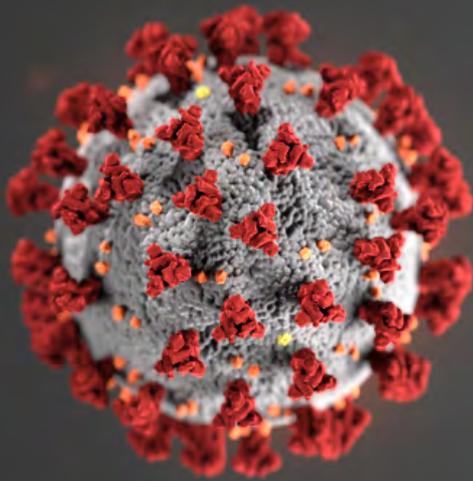
<https://www.cdc.gov/quarantine/maritime/index.html>



# CMTS COVID-19 Working Group Resources

- **COVID-19 Working Group Website**
  - [https://www.cmts.gov/topics/working\\_group](https://www.cmts.gov/topics/working_group)
- **COVID-19 Working Group Resource Catalogs**
  - [COVID 19 Federal Guidance And References For The U S Maritime Industry](#)
  - [COVID 19 Best Management Practices For The U S Maritime Industry](#)
  - [Mental Health Resources For U S Merchant Mariners And Critical Workforce In The MTS](#)
- **For questions or comments on the above three catalogs, please contact:**
  - [C19WG@cmts.gov](mailto:C19WG@cmts.gov)





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

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

