

GW MMA Coronavirus Guidance

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Disclaimers and use of this Document – PLEASE READ THIS FIRST

This document has been put together by GW Maritime Medical Access to provide guidance on the current Coronavirus pandemic.

The information contained in this document is not designed to serve as company policy for individual clients. **We recommend that each client develop internal company policies on coronavirus management and response that best suit their individual operational needs.** This document is designed to provide background information and recommend practices to support our clients in the development of these policies. **This document does not serve as medical or legal advice, nor as a regulatory mandate or industry standard.**

We do suggest that organizations consider some of the following questions when developing policies:

- 1) How will crew be educated about the Coronavirus, and how will crew be made aware of these policies?
- 2) How will crew be screened for Coronavirus prior to embarking on a vessel?
- 3) How will operations aboard be altered to minimize the risks from Coronavirus?
- 4) How will operations in port be altered to minimize the chance that Coronavirus may penetrate the vessel?
- 5) How will ill crew members be isolated and managed aboard the vessel?
- 6) How will operations be managed if a vessel diversion or crew-member evacuation becomes necessary?
- 7) What additional or extra equipment should be carried on the vessel during the coronavirus pandemic?

The Coronavirus pandemic is a dynamic and constantly changing situation and as such, guidance on the topics discussed in this document may change over time. This document will be periodically updated to reflect this. **When using this document, please check to ensure that you have the most up to date version.**

The guidance in this document is based on a variety of sources, including review of medical literature and current CDC recommendations. Where possible, links to additional information published by the CDC are included. Linking to this material will help to ensure that the most up to date recommendations are available.

As always, clients should contact GW MMA at 001-202-715-4219 if assistance is needed or a crew member becomes ill.

General Information

Background

The SARS-CoV-2 Coronavirus, which causes COVID-19 infection, appears to have started infecting people in and around the city of Wuhan China in late 2019. It is presumed that the infection spread out of the area where it started through infected travelers. Patients with the disease have been identified throughout the world, and the infection was declared a pandemic by the World Health Organization on March 11th, 2020. The pandemic is being closely monitored by national and international health agencies such as the WHO and the U.S. Centers for disease control (CDC). As these organizations gain more understanding about the nature of the disease; how it is transmitted; how to diagnose cases and how to best prevent spread of illness, they provide updated guidance on these matters. ***In short, the progression of the SARS-CoV-2 pandemic is highly dynamic, and recommendations on management periodically change.***

There are many types of Coronaviruses that infect humans and other animals, including 4 Coronaviruses that cause the common cold in humans. Sometimes Coronaviruses that prefer non-human hosts begin to cause disease in people. They are referred to as “new” or “novel” Coronaviruses and can cause more serious, and even fatal infections in people. Therefore, when a novel Coronavirus is identified, and it is shown to be passing on from person to person, this is regarded as a potential public health emergency. To date, there have been 3 major outbreaks associated with novel Coronaviruses: SARS-CoV in 2003, MERS-CoV in 2012, and more recently the ongoing pandemic, SARS-CoV-2, which causes the disease called COVID-19. SARS-CoV-2 is unique from other recent novel coronaviruses in several ways that have allowed it to spread world-wide, while the other recent coronaviruses had only limited spread.

Transmission

Coronaviruses are usually spread from infected to non-infected persons through respiratory droplets or aerosols which come from a person’s oral and nasal secretions. When a patient coughs or sneezes, these droplets or aerosols can become airborne. A person can deposit secretions on their hands and transmit them to any surface that they touch (such as a door handle or a faucet). When a noninfected person comes into contact with an infected droplet or aerosol, they are risk for contracting the disease.

The virus can be contracted when an infected droplet comes in contact with a person’s mucous membranes, such as when it is inhaled or gets into the eye.

One aspect of the current Coronavirus that appears to be unique is that infected persons can pass the virus on to others before showing any symptoms. Some individuals may become infected and recover without ever showing symptoms. Consequently, the virus can spread

from one person to another without the first person even being aware that they have, or are spreading, the virus.

Transmission is more likely when an infected individual has prolonged or continuous contact with others. In particular, the US CDC defines a close contact as “Someone who was less than 6 feet away from infected person (laboratory-confirmed or a clinical diagnosis) for a cumulative total of 15 minutes or more over a 24-hour period (for example, *three individual 5-minute exposures for a total of 15 minutes*). An infected person can spread SARS-CoV-2 starting from 2 days before they have any symptoms (or, for asymptomatic patients, 2 days before the positive specimen collection date), until they meet the criteria for ending isolation.”¹

Symptoms

Almost all of the Coronaviruses that infect people cause a common cold: runny nose, slight fever, mild cough, aches, and fatigue. Most individuals who are infected with the SARS-CoV-2 virus will develop some of these symptoms.

Symptoms that may indicate infection with SARS-CoV-2 include:

- 1) Fever (temperature over 100.4° Fahrenheit or 38° Celsius) or chills
- 2) Cough
- 3) Shortness of breath or difficulty breathing
- 4) Fatigue
- 5) Muscle or body aches
- 6) Headache
- 7) New loss of taste or smell
- 8) Sore Throat
- 9) Congestion or runny nose
- 10) Nausea or vomiting
- 11) Diarrhea

A small percent of those infected with SARS-CoV-2 will go on to develop severe symptoms and have difficulty breathing that is severe enough to require a breathing tube and ventilator (machine to assist breathing). SARS-CoV-2 also appears to increase the likelihood of other severe complications such as blood clots and strokes. Identifying and managing SARS-COV-2 infections may be challenging because many of these symptoms overlap with other infections that will not progress to severe disease.

People with pre-existing medical conditions, such as diabetes, high blood pressure, obesity, COPD, chronic kidney disease, heart disease, or other conditions are at greater risk for having more severe COVID-19 disease. Smokers and those who are immunocompromised are also at greater risk for having more severe COVID-19 disease.

¹ <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/appendix.html#contact> (last accessed 10/15/2021).

More information on conditions that increase risk may be found here:

<https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>

While many who become infected with SARS-CoV-2 never develop symptoms or develop only mild symptoms, others may become quite ill. The fatality rate from diagnosed infections varies by country but remains over 1%, with greater risk in older patients. Those with SARS-CoV-2 infection can have delayed health problems from the infection or prolonged recovery from the disease, including in those who are young or otherwise healthy. These extended courses or later complications of COVID-19 have been dubbed post-acute sequelae SARS-CoV-2 infection (PASC), and may be referred to as “long-COVID”. Additional information on delayed health problems and prolonged recovery may be found here: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/late-sequelae.html>

Treatment

There are several medications and other treatments that are in trials and being tested for use in treating COVID-19. In October of 2020 the US FDA approved a drug called Remdesivir for the treatment of COVID-19 in hospitalized patients. There are two additional drugs (bamlanivimab and casirivimab+imdevimab) that have received emergency use authorization in the United States for the treatment of outpatients who have certain risk factors for developing severe disease. The latter combination, which is also known as REGN-COV2, may also be used for post-exposure prophylaxis to lessen the chance that someone exposed to SARS-CoV-2 will develop COVID-19. Use of steroid medications such as dexamethasone have also shown some benefit in hospitalized patients who require supplemental oxygen.

However, because these drugs show only limited benefit, and only in certain patient groups, the vast majority of treatment is still mostly *supportive*, which means that health care workers (HCW) treat a patient's symptoms while the patient recovers. Furthermore, with the possible exception of steroid medications, these medications are generally not available to be carried aboard ships.

Therefore, the most important measures that we can take as citizens and HCWs is to follow the guidance of agencies such as the CDC and WHO to get vaccinated and to limit the spread of SARS-CoV-2. It continues to be important that we are vigilant about identifying and isolating potential cases AND that we follow advisories on how to avoid contracting and transmitting the virus.

Testing

GW Maritime Medical Access has put together the following guidance for crews to understand the different types of tests available for COVID-19.

Some Important Notes on Testing

A basic idea that is true of ALL medical testing (lab tests, EKGs, x-rays, etc.) is that no test is perfect and no test will give the correct answer 100% of the time. Consider a strep test: if your doctor only swabs one side of your throat for a fraction of a second, there might not be enough strep on the q-tip to detect strep, even if you do have strep throat. Furthermore, tests have different abilities to see disease. That's why a small fracture in a bone might not show up on an x-ray but will show up on a CT scan. This is true of blood tests as well.

Different SARS-CoV-2 test types and variations in accuracy can complicate interpretation of the tests. While some tests for SARS-CoV-2 have become smaller, cheaper, and more portable, not all tests have the same utility in all situations. There is no fail-safe test, or mix of testing and quarantine, that can guarantee that a vessel is free of the virus that causes COVID-19 before it leaves port. Testing may be used to lessen risk, but testing cannot completely eliminate the risk. When tests are done, they should be interpreted by a physician with experience in evaluating the context in which the test was performed. **It is important to note that a single negative test cannot reliably rule out SARS-CoV-2 infection.**

Test Types

There are several categories of testing for SARS-CoV-2, which is the virus that causes COVID-19: **diagnostic tests**, which are used to provide a *diagnosis* of COVID-19, and **antibody tests**, which are used to evaluate for an *immune response* to SARS-CoV-2.

Diagnostic Tests

There are two types of tests that are used to look for active COVID-19 infection: **Antigen Tests**, which look for certain material on the outside of a COVID virus, and **molecular tests**, which look for genetic material from the virus. There are several types of molecular tests, such as RT-PCR, NAAT, LAMP tests, and others.

Antigen tests may be simpler to perform than molecular tests, but because they are less accurate than molecular tests, especially in those who don't have symptoms, they are more often used to **screen** for disease rather than **diagnose** disease. Some antigen tests may be performed without laboratory equipment (in a similar fashion to a home pregnancy test), so may be the most readily available tests in the maritime environment. If an antigen test is negative but the person tested has symptoms of COVID-19, then a follow-up molecular test

should be obtained. Additionally, if an antigen test is positive but the person tested does not have symptoms of COVID-19, then a follow-up molecular test should be obtained. This is why it is very important to know what type of test is done, and in what context, when a mariner is tested.

The *diagnosis* of COVID-19 may be confirmed using a **molecular test**. This is generally a nasal swab that looks for viral genetic material. It usually requires a professional to obtain the nasal swab and generally must be run in a lab, although there are some molecular tests that can be done by saliva or by self-swab, which is when the patient collects the sample on him- or herself. These tests carry some risk to the individual collecting the sample, and test accuracy is dependent on proper sample collection technique. While the accuracy of these tests has improved over the course of the pandemic, it still varies from test manufacturer to test manufacturer. Furthermore, accuracy of these tests is also highly dependent on when in the course of the disease the sample is taken, sample collection technique, sample handling, and transport to the lab. Consequently, COVID infection is often presumed in a symptomatic individual even if a molecular test is negative if there is no alternative explanation for the patient's symptoms. A test that returns a negative result in an individual who is actually infected is called a **false negative test**. Occasionally, although less frequently, a test may show a positive result in someone who is not infected. This is called a **false positive test**.

Both antigen tests and molecular tests may be used for disease **surveillance testing** as well. Surveillance testing is when a group of individuals are tested on a regular basis, even if asymptomatic, to see if any of them have been infected with SARS-CoV-2. Surveillance testing may allow an outbreak to be caught earlier and limit the spread of virus.

Diagnostic tests may remain positive for in some individuals for weeks after they have recovered from illness and are no longer able to transmit virus to others. Consequently repeat testing to clear individuals of infection is not required or recommended, and surveillance testing is not recommended for 90 days after an individual has been diagnosed with SARS-CoV-2 infection.

Antibody Tests

Antibody tests look for antibodies in the blood. Antibodies are produced by the body's immune system in RESPONSE to the virus. These tests can be run using a small kit in nearly any location and are comparatively simple to administer. A small blood sample is typically collected via a sterile pinprick of the patient's finger. The individual collecting the sample must still adhere to basic infection control precautions.

The test looks for two markers in the blood call immunoglobulins (Ig):

1. IgM – a marker of acute infection. If IgM is detected it means the body is fighting the virus.
2. IgG – a marker of lasting immunity. The medical community is still unsure how effective this immunity is or how long it may last. It appears that most people who are infected become immune for a period of time, although there are documented cases of re-infection.

Typically after a person is infected with a virus, they eventually begin to “shed” the virus, meaning that they may potentially infect others around them. During this time the RT-PCR nasal swab test can detect the virus.

At some point, they may become symptomatic, and the body will start making IgM, which can be detected by the blood test. Later on, they will start to make IgG, which can also be detected by the blood test, and they will eventually stop making IgM. If they become re-infected in the future, the body “remembers” the virus with the IgG and the body will start making IgM again to fight the virus.

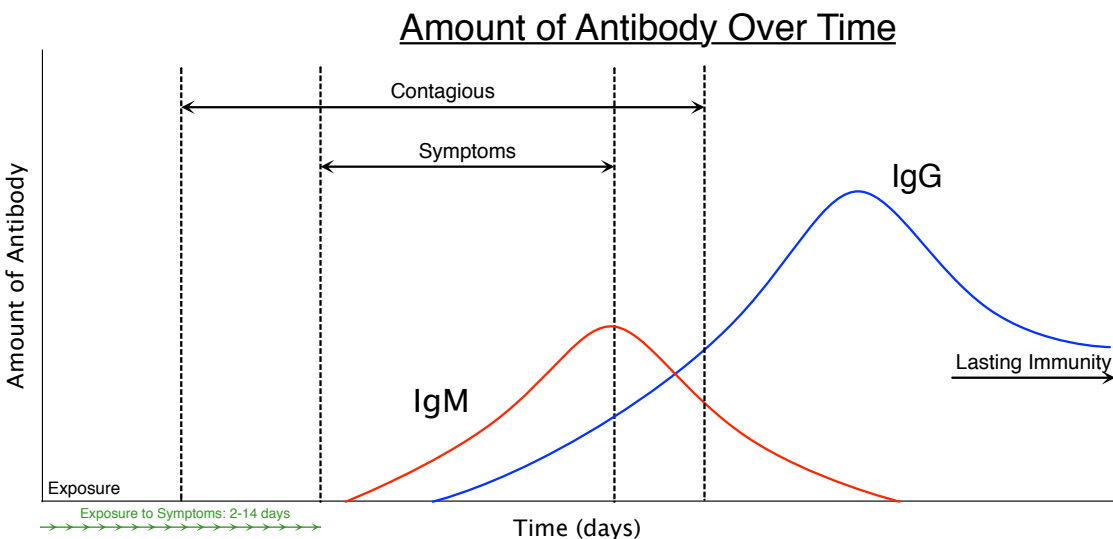


Figure 1: Infection Timeline

The above series of events is typical for most viruses. Figure 1 demonstrates our current understanding of these events for SARS-CoV-2. Patients with COVID-19 can be contagious both before and after they show symptoms, and some may be contagious but never show symptoms at all. Because those infected with SARS-CoV-2 do not typically develop antibodies until sometime after they become contagious, antibody tests cannot currently be used to rule-out

infection. This issue is compounded by a great deal of variability in the reliability of the tests from manufacturer to manufacturer.² **Because of these concerns antibody testing for COVID-19 cannot be used to rule out an active infection and cannot currently be used to make decisions about the individual returning to work.**

How are the Ig test results interpreted?

Although antibody testing for COVID-19 cannot currently be used for clinical decision-making, there may be emerging uses for these tests in disease surveillance. We provide the following detail on how the antibody tests are interpreted for reference.

Ig Type →	IgM	IgG	↓ Interpretation ↓
Detected by Test?	No	No	Negative Test, though there is a chance patient is infected and it's too early to detect immune response, or test is a "false negative"
	Yes	No	Patient is infected, consider diagnostic testing, isolation, monitoring, and treatment in the right clinical setting
	Yes	Yes	Patient is infected and has started to mount immune response
	No	Yes	Patient was infected at some point in the past, or was previously immunized

If there is any IgM detected, whether or not IgG is detected, the patient has likely been recently infected, or recently vaccinated. Diagnostic testing and isolation may be considered, especially if the patient has any symptoms of COVID-19.

If there is no IgM or IgG detected, the test is negative. However, there is still a chance the patient is infected but an immune response can't yet be detected, or that the test is a *false negative*. The patient may be re-tested after a period of to see if the results have changed.

If there is no IgM detected but IgG is detected, the patient was likely previously infected and now has mounted and immune response, or was vaccinated in the past. Based on current understanding the IgG confers some measure of immunity. Per current CDC recommendations:

- "Unvaccinated persons who are asymptomatic and who test positive for SARS-CoV-2 antibody without recent history of COVID-19 or a compatible illness have a low likelihood of active infection and do not need to isolate."³

Those who have immunity by vaccination should generally still follow the same public health guidance around social distancing and mask wearing as those who have not been infected or

² <https://covidtestingproject.org/>

³ <https://www.cdc.gov/coronavirus/2019-ncov/lab/resources/antibody-tests-guidelines.html>. Last accessed April 29, 2021.

vaccinated, with certain exceptions in private settings as outlined below. It is not yet known how effective immunity is, how long it may last, or how often those who are immune may still pass infection on to others who are not immune.

Carrying Diagnostic Tests Aboard

There are now molecular tests and antigen tests that have become small enough and are low cost enough to carry aboard vessels. Such tests are called Point-of-Care (POC) tests because they may be performed at the point of care and are not dependent on a dedicated laboratory. Some POC tests still require delicate dedicated machinery, but some tests require only the contents of a small kit to provide results. There is potential utility to carrying these test kits aboard. Different test products may be used in different situations. Clients who are considering a test kit purchase may contact GW MMA prior to purchase to discuss specific test kits available in the market and appropriate onboard testing strategies.

If an outbreak is suspected aboard a vessel, we also recommend that clients contact us so we may help determine whom to test and interpret the results in context.

Vaccination

Three vaccines have received emergency use authorization in the United States. Two of them (Pfizer/BioNTech, Moderna) require two doses separated by several weeks as well as special handling and cold storage. The third (Johnson and Johnson) requires a single dose and has less stringent handling requirements. The Pfizer/BioNTech EUA allows administration to those who are 16 and older, while the Moderna and Johnson and Johnson vaccine EUAs allow administration to those 18 and over. Vaccine availability has greatly expanded in the United States, and all states now allow vaccination of those over 16. Individuals are not considered **fully vaccinated** until 14 days after their final vaccine dose (the second dose for a two dose vaccine and the first dose for a single dose vaccine).

While there are some differences in the published effectiveness of these vaccines, all three appear to be safe and effective, especially with regard to protection against the most severe disease. There was a pause in the use of the Johnson and Johnson vaccine (as well as a pause in the use of another vaccine in use outside the United States made by AstraZeneca) over concern for slightly increased risk of a rare type of blood clot. Use of both of these vaccines has resumed, though with some limitations and warnings, because these blood clots are exceedingly rare and it is felt that the benefit of vaccination still outweighs the risk of blood clots. Additional information on the resumption of Johnson and Johnson vaccine use in the United States may be found here: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/JJUpdate.html>.

There are additional vaccines that have received emergency use authorization outside the United States. Some of these vaccines have come into use prior to the completion of initial clinical trials. Mariners who choose to be vaccinated should consider the approval type and completeness of clinical trials for the vaccine available to them.

Seafarers may face unique challenges to getting vaccinated. Extended time at sea, variable vaccine availability outside the United States, and state residency requirements pose particular challenges. Furthermore, scheduling a follow up dose after the first dose in a two dose regimen may be difficult due to schedules and travel needs. The vaccines that require two doses are not considered interchangeable, and the effectiveness of having a first and second dose from a different manufacturer is not yet known. Seafarers should keep a record of which vaccine they receive for their first dose, and should make every effort to have the second dose from the same manufacturer. However *we recommend that seafarers do not delay obtaining the first dose due to uncertainty about scheduling the second dose.* A single dose of a two dose vaccine will provide some protection. A different vaccine may be given for the second dose at least 28 days after the first dose if the first dose manufacturer is not known or is no longer available, however the CDC currently recommends that the second dose be delayed up to 6 weeks if the same vaccine product used for the first dose is not readily available for the second dose. Additional information on COVID-19 vaccines, including information on interchanability of products, may be found here: <https://www.cdc.gov/vaccines/covid-19/info-by-product/clinical-considerations.html>.

Any written documentation of vaccine administration should be kept by all mariners as proof of vaccination. Should mariners elect to become vaccinated, they should continue to follow public health advice regarding social distancing and mask wearing, as well as company SARS-CoV-2 safety protocols, for the reasons outlined in the preceding section. Although the CDC outlines certain circumstances in which *fully vaccinated* individuals may interact without masks and social distancing, these generally apply to small gatherings with family and friends in private settings, and also require knowledge of individuals' risk factors for severe disease. As seagoing vessels are places of work, may be far from medical care, and have communal dining and berthing areas, maintaining COVID-19 control measures such as masking and social distancing continues to be important to control virus spread.

Interim public health recommendations and guidance for fully vaccinated individuals may be found here: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html>. It is important to consider whether this guidance applies, or should be exceeded, for a particular ship in a particular situation, given the risks of the remote environment and the operational implications of diversion or evacuation for an ill crewmember. Those who are exposed to COVID-19 after being fully vaccinated should be tested 3-5 days after

exposure, and should wear a mask for 14 days or until they receive a negative post-exposure test.

Breakthrough Cases

While vaccination reduces the chance that an individual will become infected with COVID-19, no vaccine provides 100% protection. When a person who is fully vaccinated becomes infected with SARS-CoV-2, it is called a **breakthrough case**. Breakthrough cases are expected, and the number of breakthrough cases will be related to several factors, including overall vaccination rate, the use of mitigation measures such as screening, masking, and social distancing, and transmissibility of the circulating SARS-CoV-2 variants (see below). Breakthrough cases may produce less severe illness than cases in those who are not fully vaccinated, and there is some evidence that vaccinated individuals are less likely to pass SARS-CoV-2 on to others.⁴ However, transmission may still occur and vaccinated individuals who become infected should still isolate away from others. Unvaccinated close contacts of vaccinated individuals with breakthrough infection should quarantine for 14 days. While the vast majority of cases, hospitalizations, and deaths occur in the unvaccinated, continued shipboard vigilance remains important.

Vaccine Boosters

We do not yet know exactly how long immunity from vaccines will last. Immunity may also last for different periods of time in different people, and the duration of immunity may be affected by factors such as age or use of immunosuppressive medications. Therefore, some individuals may need an additional vaccine dose, called a booster, at some time after completing initial vaccination. Scientific understanding of the need and timing of vaccine boosters is still evolving, and current US CDC recommendations may be found here: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/booster-shot.html>.

Variants of Concern

Over the course of the pandemic variants of the SAR-CoV-2 virus have emerged. Natural changes to viruses occur on a regular basis. Most of these changes result in virus variants that do not cause differences in infection, but occasionally a variant may emerge that is more transmissible or that can cause more severe disease. In some scenarios a variant may be less susceptible to vaccine. Variants that may change the course of the pandemic are called Variants of Concern.

⁴ Effect of Vaccination on Household Transmission of SARS-CoV-2 in England. <https://www.nejm.org/doi/full/10.1056/NEJMc2107717> Last Accessed 7/23/21.

The US CDC provides information on variants of concern here:

<https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html>.

In particular, two more transmissible variants (called Alpha and Delta) have emerged over the past 8 months. There is currently no evidence to suggest that any of these variants are completely resistant to the vaccines that are available, however these variants have contributed to increases in cases, especially among the unvaccinated. Cases. Another reason that it is important to maintain masking, social distancing, and other COVID-19 management strategies even after vaccination is that continued spread may provide more opportunity for new Variants of Concern to emerge.

Specific Recommendations

General Precautions

The best way to manage COVID-19 is to attempt to avoid contracting it. Individuals will reduce their chance of contracting the virus or spreading it to others by integrating the following recommendations into their daily routine, whether ashore or aboard ship.

- 1) Get Vaccinated. While other interventions continue to be relevant, having a fully vaccinated crew is the single most effective intervention to reduce onboard risk.
- 2) Frequently clean and disinfect surfaces and objects that come into contact with multiple crew members (e.g. ship's wheel, radar screens, radios, bathrooms, dining areas, exercise rooms etc.). Consider developing a cleaning schedule that ensures routine cleaning at standard times such as the start of each watch, or with each boat check.
- 3) Practice social distancing, which includes the following*
 - a. Stay at least 6 feet from other people
 - b. Do not gather in groups
 - c. Stay out of crowded places and avoid mass gatherings
 - d. Further details and tips on social distancing can be found on the CDC website here: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>
- 4) Wash hands frequently with soap and water or an alcohol-based hand sanitizer.
 - a. Hands should be washed for a full 20 seconds and care should be taken to ensure that all surfaces of the hands and wrists are washed
 - b. more information on handwashing may be found here: <https://www.cdc.gov/handwashing/when-how-handwashing.html>
- 5) Avoid touching the face.
 - a. Every effort should be made to avoid touching the face, which would transfer infectious material from the hands to the mucous membranes of the eyes, nose, and mouth.
- 6) Wear a mask when in common areas.*

- a. Surgical masks are designed to catch respiratory droplets as people talk, breathe, or sneeze, and reduce the likelihood of transmitting the virus to others. They may provide some protection to the wearer as well.
 - b. N-95 masks reduce the chance that the wearer will contract the virus when in the presence of an infected individual (see below section on care for an ill crewmember). N-95 masks must be fit-tested to the wearer to be maximally effective to their rating.
 - c. If the above are not available, homemade masks or other face coverings are currently recommended by the CDC, however these types of coverings are felt to be less effective than purpose designed surgical masks.
 - d. Disposable masks are not designed for repeat use however due to supply shortages it may become necessary in certain circumstances to reuse masks. If the supply of masks is limited and they must be reused, each crewmember should be issued multiple masks and they should be used in rotation. After a mask is used it should be stored in a paper bag labeled with the date of use and the following day the next mask should be used. Each should be stored and when a crewmember's individual supply of masks has been fully used, the mask worn on the first day should be used again. Crewmembers should then cycle through their supply of masks in the same order as they were originally used. The storage in a bag is to allow any virus particles to reduce their infectivity. More information on mask re-use may be found here:
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html>
 - e. Double masking (wearing a cloth mask over a surgical mask) has been shown to be more effective than wearing a single mask alone. However, two surgical masks or an N-95 mask and a surgical mask should not be worn together.
- 7) Cover coughs and sneezes with a tissue and throw the tissue away after use. Wash hands after coughing or sneezing.
 - 8) Gloves should not be worn for an extended period of time except during activities for which specific gloves are otherwise indicated.
 - a. When latex or nitrile gloves are worn for an extended period of time they may become contaminated with coronavirus or other infectious or dangerous material. They may provide a false sense of security and are generally not routinely cleaned the way hands are when washed. Consequently, contaminated gloves may spread infectious material as the wearer touches multiple surfaces or his or her face.
 - b. Latex or nitrile gloves should be worn when cleaning potentially infectious surfaces or when caring for a mariner who is known or suspected to have COVID-19. Appropriate protective gloves should also be worn if otherwise indicated (for example during activities such as cargo handling, rigging, welding, etc.).
 - 9) Ensure that nails are trimmed.
 - 10) Avoid Close Contact with those who are sick unless providing direct care.
 - a. The CDC defines a **close contact** as being within 6 feet of an infected individual “for a cumulative total of 15 minutes or more over a 24 hour period starting

from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection) until the time the patient is isolated.”⁵

*The US CDC has made recent changes to its recommendations for masking after vaccination. On May 13, 2021 the CDC removed recommendations for masking and social distancing for those who are **fully vaccinated** in most situations, “except where required by federal, state, local, tribal, or territorial laws, rules, and regulations, including local business and workplace guidance.” Masking and social distancing continued to be recommended for those who were not fully vaccinated. On July 27, 2021, due to the spread of Delta Variant, the US CDC updated its guidelines to state that those who are fully vaccinated should wear a mask indoors in areas of substantial or high transmission.⁶ Definitions and an updated map of transmission in The United States may be found here: <https://covid.cdc.gov/covid-data-tracker/#county-view>. GW MMA strongly recommends that vessel operators consider keeping masking and social distancing requirements in place, even for those who are fully vaccinated, because ships often have small shared spaces and may be far from definitive medical care should the need arise.

How to clean and disinfect surfaces

The CDC provides detailed guidance on cleaning and disinfecting surfaces and objects. This guidance can be found here: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/disinfecting-your-home.html>

Additionally, the EPA maintains a list of disinfectant products that are effective against SARS-CoV-2, which can be found here: <https://www.epa.gov/pesticide-registration/list-n-disinfectants-coronavirus-covid-19>

Prior to Embarkation

Every effort should be made to ensure that potential crewmembers do not embark on a vessel if they are sick or likely infect others.

Although there is no perfect way to ensure that a crew is free of the virus before embarkation, a very extended quarantine prior to embarkation is theoretically the best method to ensure that a crew has a low chance of carrying the virus. Most people tend to become symptomatic within 5-14 days, but there may be a very small number who still become symptomatic after 14 days.

⁵ <https://www.cdc.gov/coronavirus/2019-ncov/global-covid-19/operational-considerations-contact-tracing.html>. Last accessed Jan 19, 2021.

⁶ <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated.html>. Last accessed August 2, 2021.

Furthermore, some people become infected and shed virus without ever becoming symptomatic. If you take a crew and put them on a ship under PERFECT quarantine (i.e. no individuals or objects in or out) and none of them become symptomatic, then with each day they are isolated the likelihood that the virus is present decreases. It is much lower on day 14 than on day 1, but it is not zero. It is lower still on day 30, and lower still on day 45. In theory it never reaches zero but at some point it becomes close enough to zero that you can reasonably conclude that it is safe to leave the dock. The challenge is in deciding how long that quarantine has to be to make the risk low enough that it is in balance with your operational needs.

When designing a pre-embarkation screening strategy, it is important to recognize that different vessels may require different strategies, and that *the human, economic, and operational costs of an infection aboard must be weighed against the human, economic, and operational costs of a particular screening strategy*. For example, a vessel with a planned 3 day near-coastal voyage with a mission of comparatively low operational priority may be able to tolerate more risk than a vessel with a planned 2 month off-shore voyage with a comparatively high operational priority. The vessel far from shore will have a longer transit time to port in case of illness, and the consequences of diversion are more substantial. Additionally, it may not be practical for a crew to quarantine for a period that is many times longer than the planned time at sea.

Because operational needs may make complete quarantine for 14 days impractical or impossible, **we recommend that each maritime client develop an individual policy on quarantine, testing, and disease management that fits within their unique operational needs. We provide the following guidance to assist in policy development.**

Keeping the Virus off the Vessel: Crew Changes

Crew changes should be kept to a minimum, meaning that crew deployments may have to be extended to keep vessels operational.

New crew who are rotated on to the vessel should be screened for symptoms of COVID-19, quarantined for a period of time, and where possible, tested for COVID-19 prior to embarkation.

Screening

Ideally, crew members should be screened 14 days in advance of embarkation. If this is operationally unrealistic, screening should take place as far in advance of embarkation as possible. Screening should include, at a minimum, the following questions:

- 1) In the last 14 days, have you had any symptoms of COVID-19, such as fever, cough, shortness of breath, loss of smell or taste etc.? (please see “symptoms” section above for more complete list)

- 2) In the last 14 days, have you had contact with a person who was known to have, or suspected of having COVID 19?

If the answer to question 1 is “YES”: The screened crewmember should not join the crew. He or she should be tested where ever he or she is located, and should be under the care of a local physician. He or she should not join a crew until after CDC return to work criteria have been met or exceeded. **The CDC recommendations that describe when a person may return to work can be found here: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html>** We further recommend that each client or vessel consider putting the recovered individual through further quarantine consistent with company pre-embarkation policy prior to his or her joining a crew. As described in the testing section above, diagnostic tests may remain positive for an extended period after an individual is no longer ill and is no longer able to transmit SARS-CoV-2 to others.

If the answer to question 2 is “YES”: The screened crew member should undergo a 14 day quarantine, **at an absolute minimum**, prior to joining a crew (see below).

If the answer to both questions is “NO”: We still recommend that the screened crewmember undergo a 14 day quarantine if possible. If this is not possible, we recommend that the screened crewmember undergo a quarantine for as long as possible prior to embarkation.

Self Quarantine

After initial screening, all crewmembers should undergo a period of quarantine. The goal of the quarantine period is to observe each potential crewmember for signs of infection during a period when their exposure to infected individuals is at a minimum.

Duration of Self Quarantine: Quarantine should ideally last 14 days to capture late symptom onset. This is because symptoms will typically appear within 2-14 days of exposure, with a peak 5 days after exposure.⁷ Occasionally, an individual may develop symptoms more than 14 days after exposure. If it is not operationally feasible to set a 14 day quarantine period, a quarantine period as close to 14 days as possible should be selected.

Location of Self Quarantine: Quarantine should ideally be as close to the vessel as possible. While it may be operationally more practical to have each crewmember quarantine at home, travel to the vessel at the end of the quarantine period carries risk that the crewmember will be exposed to SARS-CoV-2 in transit. A hotel near the vessel may be a practical alternative, with each crewmember staying in his or her room. If this option is used, contact between crewmembers during the pre-embarkation quarantine should be eliminated. If a crewmember

⁷ <https://annals.org/aim/fullarticle/2762808/incubation-period-coronavirus-disease-2019-covid-19-from-publicly-reported>

becomes symptomatic during this time, any crew-members with whom he or she has had contact would have to start a new period of quarantine. Pre-voyage quarantine should ideally not occur on a vessel. If pre-voyage quarantine must occur on a vessel, crew-members should minimize contact and spend the majority of their time in a private cabin.

Quarantine Practices: The following practices should be adhered to as closely as possible during quarantine:

- 1) Contact between the individual under quarantine and other individuals should be kept to an absolute minimum. This means that potential crew members under pre-voyage quarantine at the same location should not congregate for meals or social activities. If potential crew members are quarantining at home, they should attempt to minimize contact with family members.
- 2) Individuals under quarantine should check their temperature twice a day if a thermometer is available. Thermometers should not be shared between individuals under quarantine although a non-contact thermometer may be used on multiple individuals. A temperature above 100.4°F (38°C) should prompt further investigation. Checking blood oxygen saturation with a pulse-oximeter is not routinely recommended when individuals are asymptomatic, but if it is checked, an arterial oxygen saturation below 95% should prompt further investigation. A single out of range reading may be aberrant but persistent abnormalities should disqualify an individual under quarantine from joining a crew until he or she is evaluated and cleared by a physician.
- 3) Individuals under quarantine should also complete a daily symptom questionnaire and those who develop concerning symptoms should be disqualified from joining a crew.

If individuals under quarantine become disqualified from joining a crew, they should undergo testing per local availability and should establish care with a local physician. As in the above case of failure during prescreening, he or she should not join a crew until after CDC return to work criteria have been met or exceeded. **The CDC recommendations that describe when a person may return to work can be found here: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html>** We further recommend that after these criteria are met the potential crew member undergo an additional 14 day quarantine before joining a crew.

The Role of Testing During Pre-travel Quarantine

Combining testing, if available, with quarantine may decrease the likelihood that an asymptomatic carrier of coronavirus joins a crew. For example, if all crew are tested with molecular tests during quarantine, and one asymptomatic potential crewmember tests positive than that potential crewmember should not join the crew. However, a single test cannot reliably and definitively rule out infection. Serial testing (multiple tests during a quarantine period) will decrease the chance that an infected but asymptomatic crew member will pass onto a ship from quarantine.

If testing is used, we recommend that a test be performed at the start of quarantine, and another be performed prior to embarkation. Because antibody formation is late in the disease course antibody tests cannot be used to rule out SARS-CoV-2 during a 14 day quarantine.

Vaccines and Pre-embarkation Quarantine and Testing

Updated CDC guidelines allow those who are fully vaccinated to avoid quarantine after an *exposure* to SARS-CoV-2. However, as most ships at this time will have a mix of vaccinated and unvaccinated crew members, and as there is ongoing uncertainty around transmission among vaccinated individuals with breakthrough cases, and between vaccinated and unvaccinated individuals, there is still protective value in pre-embarkation quarantine and testing.

Reduction or elimination of pre-embarkation quarantine and testing after vaccination should be considered on a case by case basis, and should take into account the percent of the crew that is fully vaccinated, the mission of the vessel, and the vessel's ability to manage an outbreak or evacuate ill crew-members to shore. Ships with fully vaccinated crews that take on passengers may still have a mix of vaccinated and unvaccinated individuals if the vaccination status of the passengers is not known.

Aboard Ship

Aboard each vessel we recommend that crew follow advisories on how to avoid contracting and transmitting the virus, and also that crew are vigilant about identifying and isolating potential cases. Shipboard policies should address transmission reduction and disease management, should any crew member become ill.

Access Control

To the extent possible we recommend that only screened and quarantined individuals be allowed aboard vessels. Screened and quarantined individuals should have a final symptom check and temperature taken immediately prior to boarding.

Deliveries of ships stores should be left on land rather than delivered aboard, and brought aboard by crew who have been appropriately screened.

If unscreened individuals must come aboard the vessel (for example local pilots, engineers, or others conducting repairs), we recommend the following:

- 1) These individuals should be asked about recent COVID-19 symptoms and contact with known or suspected COVID-19 patients in the last 14 days. Consider denying entry if there have been any recent symptoms or concerning contacts unless operationally infeasible.

- 2) These individuals should also be screened for fever using a non-contact thermometer, if one is available, prior to coming aboard.
- 3) While aboard, unscreened individuals should wear a face covering that covers the mouth and nose. They should also frequently wash hands. If possible provide hand sanitizer at the point at which they come aboard.
- 4) Unscreened individual's contact with screened crew should be kept to an absolute minimum.
- 5) Unscreened individuals should only be permitted in spaces that are absolutely necessary for them to carry out their work.
- 6) Spaces that have been visited by unscreened individuals should be cleaned and disinfected after the unscreened individual disembarks.

Prevention

All crew should practice prudent standard infection precautions. These are described in the "General Precautions" section above. **It is critically important that all crew adhere to best practices. Crew should be empowered to point out lapses in best practices to others, regardless of job or rank. We also feel that it is important that crew feel comfortable expressing that they do not feel well if they develop symptoms, as a missed infection could have substantial consequences.**

In addition to adhering to infection precautions we recommend the following:

- 1) Unnecessary social gathering should be kept to a minimum while aboard until a vessel has been at sea for a period long enough to be reasonably sure that no crewmember is infected. This period re-starts after a port-call, new crew on-boarding, or visit by anyone other than a crew member. This may mean closing or limiting the maximum occupancy of common spaces.
- 2) Individual crewmembers should generally only occupy their own living spaces and working spaces that are essential for their particular job function.
- 3) If possible, all crew should have private living spaces during the duration of the Coronavirus pandemic, including private heads. If heads must be shared, only one individual should be in the head at a time. Consider leaving a period of time between head usage, and ensure that heads are routinely disinfected.
- 4) Consider daily temperature checks at pre-set times (such as at the beginning of each watch), and consider having each crew member complete a daily symptom questionnaire to be reviewed by the medical officer each day. These may identify illness early.
- 5) A cleaning and disinfecting schedule should be developed and adhered to. High touch working surfaces such as controls for ship's systems, radios, radar screens, etc. should be cleaned and disinfected according to a regular schedule. Consider high touch surfaces in areas other than the bridge or engineering spaces, such as refrigerator

handles or soda dispensers in the galley, flush handles and faucets in the heads, water fountains, doorknobs, hatch handles, etc.

- 6) Stewards or others who prepare food should practice strict hand hygiene and should wear masks while cooking.
- 7) Consider having galley staff serve food rather than using buffet service. If buffet service is used, consider allowing individuals to use their own utensils (prior to eating with them) to take food rather than using common serving utensils that are touched by multiple people.
- 8) Consider limiting social contact during meals or limiting the number of people who may be in the ship's mess at a given time, or having crew eat meals in their own living spaces.

If a Crewmember Becomes Ill

Pre-planning

Caring for an ill crew member should begin prior to embarkation. A plan of care should include the following at a minimum:

- 1) **Where will the ill crew member isolate?** Crew members who develop symptoms will have to isolate aboard the vessel. Ideally a space for isolation will be identified in advance. It may be the crew-member's own quarters, however it may be another private space. This space should ideally have its own head. If a head outside the isolation room must be used, it should be as close as possible to the isolation room and should only be used by crew who are in isolation.
- 2) **Who will care for the ill crew member?** He or she may have both medical and non-medical needs. Thought will have to be given to how supplies and waste go to and from the isolation room. This is addressed below in greater detail. If another crewmember aboard is known to have previously had the coronavirus and recovered, or has tested positive for SARS-CoV-2 IgG, it may be prudent to designate this individual to care for the ill crew-member. **Contact with an ill crewmember should be brief and adhere to good social distancing practices** (e.g. maintain 6 feet of separation if possible).
 - a. **Ideally a single individual will be designated to have contact with the isolated crew-member – this individual must be trained in the use of PPE**
- 3) **Which individual crewmembers are critical to the safe operation of the vessel, and how many crewmembers could become ill before vessel operation is jeopardized?** There should be a diversion or crew augmentation plan in case critical members of the crew become ill, or multiple members of the crew become ill.
- 4) **What must happen immediately after crewmember becomes ill?** Suggested steps are below. Consider having a plan to further limit crew interaction and limit crew movement.

Discovery of Illness

Crew should be encouraged to report all illness to the medical officer, no matter how seemingly minor, immediately. If a crew member develops coronavirus symptoms the following suggested steps should be taken:

- 1) He or she should immediately be isolated in the pre-determined isolation space.
- 2) Clients should call GW Maritime Medical Access to open a case and begin medical management.
- 3) Close contacts should be traced and questioned about symptoms. Depending on the type of vessel and size of crew, this may mean that all crew members are considered close contacts.
 - a. The CDC defines a **close contact** as being within 6 feet of an infected individual “for a cumulative total of 15 minutes or more over a 24-hour period starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection) until the time the patient is isolated.”
- 4) If the symptomatic individual has a roommate, he or she should be isolated in a different room from the symptomatic individual.
- 5) If there is testing aboard, the symptomatic individual and close contacts should be tested. Remember that a negative test, especially an antibody test, does not definitely rule the disease out.
- 6) Fully vaccinated close contacts should be tested 3-5 days after exposure, and should wear a mask for 14 days.
- 7) Close contacts who are not fully vaccinated should be quarantined for 14 days. If testing is available, consideration may be given to shortening quarantine to 7 or 10 days with an end of quarantine test. Shortening quarantine, even with a test, still carries a higher risk of continued spread than a full 14 day quarantine.
- 8) Any crew member in quarantine who becomes symptomatic should be tested, or treated as positive if testing is not available.
- 9) Anyone who has contact with a quarantined individual should be wearing appropriate personal protective equipment. This includes an N95 mask (surgical mask if an N95 is not available), splash goggles or face shield, isolation gown, and gloves. The ill crewmember should also wear a surgical mask while the caregiver is in the room.
 - a. This personal protective equipment must be properly put on (donned) and taken off (doffed) before and after the caregiver is in the room.
 - b. Details on the proper way to don and doff PPE may be found on the CDC website here: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html>. This site also includes a video on appropriate donning and doffing, and has information sheets and posters that may be downloaded to keep on a vessel.
 - c. It is very important to perform hand hygiene (washing) after PPE is doffed
 - d. We also recommend that multiple crew members be familiar with donning and doffing procedures. An individual or individuals can be designated as safety officers to observe the caregiver donning and doffing to ensure that no contamination occurs during these procedures.

- 10) Any items that the ill crewmember needs should be delivered to the room, including meals. Consider using disposable tableware for this individual to avoid bringing dishes and flatware back to the galley. If this is not possible, dishes and flatware should be considered infectious, and should be brought back to the galley in bags by an individual wearing PPE, and either placed in a dishwasher, or washed by this individual.
- 11) Any items brought out of the room, such as garbage or laundry, should be considered infectious, and should be bagged and handled by persons wearing appropriate PPE until disposed of or laundered.
- 12) The CDCs guidance on caring for someone in isolation outside of a healthcare setting has more information on how to manage contact with an ill individual, and on managing the flow of items in and out of the isolation space: <https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/care-for-someone.html>
- 13) The CDC recommendations that describe when a person may return to work can be found here: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html>

In Port

We recommend that prior to visiting any port, captains and crews adhere to the following:

- 1) Prior to docking in any port, please refer to the WHO and CDC travel advisories (<https://wwwnc.cdc.gov/travel>). In addition, local port authorities might have advisories that are in effect that should be considered.
- 2) While in port, we suggest that close contact with local populations be limited only to what is necessary to conduct business.
- 3) Crewmembers not disembarking should remain on the vessel unless they must go ashore to conduct business related to the operation of the vessel, or to seek medical care as needed.

Education and Training

We recommend that all crewmembers should be educated on best practices and should be made aware of company policies on the management of COVID-19. In particular all crew should:

- 1) Be aware of the signs and symptoms of COVID-19 and be encouraged to report illness.
- 2) Be educated on, and encouraged to practice frequent hand hygiene and other infection control practices.
- 3) Be familiar with the ship's disease surveillance and response plan.
- 4) Be educated on the company's pre-embarkation procedures.
- 5) Know how COVID preparedness impacts day to day ship operations (extra cleaning, limits on social gatherings, etc.).
- 6) Know how COVID preparedness impacts operations while in port and while essential non-screened individuals such a local pilots are on board.

We recommend that any company policies be readily available to all crew, and that in-person or computer-based training classes be conducted with crew-members to ensure that they are aware of the above.

Additional Resources

Where possible we have linked to specific sources that may be updated over time. The following resources will provide additional information.

The CDC's Coronavirus Disease 2019 Guidance for Ships may be found here:

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

The WHO's Operational Considerations for Managing COVID-19 cases/outbreak on board ships may be found here: <https://www.who.int/publications-detail/operational-considerations-for-managing-covid-19-cases-outbreak-on-board-ships>

Appendices

Appendix 1: Quarantine and Isolation Definitions

Crew who are exposed to COVID-19 or who test positive for COVID-19 are asked to separate themselves from others to limit the spread of the virus in one of two ways:

1. **Quarantine** separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick.⁸ Crew who are exposed to COVID-19 are *quarantined*.

Anyone who gets sick or tests positive during this period goes from quarantine to isolation.

2. **Isolation** separates sick people with a contagious disease from people who are not sick.⁶ Crew who test positive for COVID-19, or who have symptoms of COVID-19 prior to testing, are *isolated*.

CDC guidance on isolation and quarantine can be found here:

<https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/steps-when-sick.html>

⁸ <https://www.cdc.gov/quarantine/index.html>