

COVID-19 Preparedness Plan for Research Vessels Scripps Institution of Oceanography

Executive Summary

This document describes pre-embarkation testing protocols and shipboard preparedness for mitigating the risks associated with sea-going science during the COVID-19 pandemic. **Safety of crew and science parties remains paramount.** This document outlines required practices and procedures for embarked mariners, technicians and scientists to minimize the risk of COVID-19 disease at sea.

Revision history:

- 15 July 2020: *Updated description of risk assessment and mitigation approach (Section 3)*
Revised galley and mess deck measures (Section 4)
Revised visitor protocol (Section 4)
- 14 July 2020: *Clarified facial covering requirements (no bandanas or masks with valves)*
- 29 June 2020: *Incorporated new UNOLS guidance (Section 3)*
- 11 June 2020: *Updated facial mask requirements (Section 4)*

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1 Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The Centers for Disease Control and Prevention (CDC) and public health entities are monitoring this pandemic. The most up-to-date CDC information can be found at the following link:

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

This guide was developed for underway and in port operation by research vessels operated by Scripps Institution of Oceanography. It is intended to

- Define practices to minimize the possibility of COVID-19 being spread aboard a ship
- Describe how to immediately respond to a suspected case of COVID-19 on board.

Our approach is based on CDC guidance. These recommendations are intended to supplement, but not replace, any existing Safety Management System directives.

Masters are ultimately responsible for the preparedness of their crews, and for enforcing and implementing the guidance that follows.

2 Shipboard Preparation

COVID-19 preparedness for Scripps Institution of Oceanography ships operating, or preparing to operate, shall include:

- Ensure ship infection prevention and control policies are consistent with CDC's latest COVID-19 guidance <https://www.cdc.gov/coronavirus/2019-nCoV/guidance-hcp.html> as applicable to the shipboard environment.
- Review procedures for rapidly identifying and isolating suspected COVID-19 patients.
- Assure ability to triage suspected cases based on current applicable CDC techniques.
- Review and update the ship's medical isolation procedures.
- Ensure that medical plans are in place for isolation of suspect COVID-19 patient (see Section 6). The Master should consult with the Chief Engineer before any potential COVID-19 cases present, in order to consider the impact of ship ventilation and cooling systems on quarantine and isolation spaces, and the potential impact on airborne pathogen spread in medical spaces and throughout the ship. Plans will be in place for how systems can be reconfigured, and/or altered temporarily to reduce exposure to shipboard personnel.
- Assess availability and maintain a log of personal protective equipment (PPE) and other infection prevention and control supplies that would be used for both crew protection and source control for infected patients (e.g., hand hygiene supplies, surgical masks, N95 respirators, etc.).
- Each ship will develop contingency plans for PPE and other infection control supplies should demand exceed current supplies.

- Review plans for implementation of surge capacity procedures, to include designated overflow spaces for both isolation (separation of sick individuals from people who are not sick) and quarantine (separation of individuals exposed to a contagious disease to see if they become sick).
- Coordinate to identify current environmental disinfection procedures (<https://www.cdc.gov/HAI/toolkits/Evaluating-Environmental-Cleaning.html>) and provide education and refresher-training for all crew members involved in ship disinfection.

3 Pre-embarkation protocols for Scripps research vessels

In order to minimize the possibility of COVID-19 being spread aboard a ship by oncoming seagoing personnel, a pre-embarkation health protocol will be developed for each mission that will involve one or a combination of practices (which may include COVID-19 testing, daily health assessments, sheltering-in-place, self-isolation or quarantine). The exact application of these elements will be developed as part of a risk assessment process that will occur for each seagoing project, taking into account the unique circumstances and risks associated with each.

Definitions:

Shelter-in-place Stay home or at your place of residence, leaving only for permitted work, local shopping related to open sectors, healthcare, food, personal exercise and local outdoor recreation. Whenever outside of the house, always wear a face covering, and maintain a physical distance of 6 feet from others. Avoid people outside your household. Avoid congested areas. Do not go to restaurants, bars or gyms. Maintain safe personal and environmental hygiene (frequent hand washing with soap and water for at least 20 seconds, clean and disinfect frequently touched objects and surfaces).

Self-isolation Stay in assigned quarters (your residence, hotel, rented lodging, or a stateroom) while being evaluated for COVID-19 infection. Avoid all outside activity, except COVID-19 testing as directed. Avoid contact with other people. Have a plan for meals, social support, in-room entertainment and in-room exercise. When interactions with other people are required (for instance meal delivery or COVID testing), all parties should wear masks and maintain a six-foot separation. Sanitize any items delivered to you.

Quarantine A 14-day period restricted entirely to one location (e.g. on board a ship) to prove you have no COVID-19 symptoms. You may be quarantined individually, or with a group (cohort). When in quarantine, always remain within the confines of your assigned area. Avoid all outside activity and avoid contact with anyone, except other members of your cohort. Within your cohort, always wear a face covering, maintain a physical distance of 6 feet, and limit time of exposure to others. Do not share any items like dishes, cups, utensils, towels or bedding. Clean and disinfect surfaces, doorknobs, computers, phones, etc. frequently.

COVID-19 test: A test for an active infection of SARS-CoV-2 using the Polymerase Chain Reaction (PCR) method. This testing uses a nasal or oral swab to detect the virus itself and indicates an active or very recent infection.

Health Assessment: A self-administered symptom screening process that asks whether you are experiencing symptoms of COVID-19.

The pre-embarkation approach we define for a mission will represent our best thinking as to how, under the specific circumstances a mission faces, we can minimize the risks to our mariners, technicians, and science community as much as practical. The examples below describe different kinds of approaches that may be used depending on the nature of a scientific mission. Note that the actual approach used for any future project will need to address the conditions specific to that project, and will likely differ somewhat from the examples below.

EXAMPLE 1: MULTI-DAY MISSION BY SAN DIEGO-BASED SCIENTISTS

In this example, a 20-day mission is conducted round-trip out of San Diego with 15 scientists and two technicians. The ship's crew has already been through a quarantine process and is resident on board. The vessel will continuously be within a two-day steam to a U.S. port. A plan is designed to keep

coronavirus off of our ship using COVID-19 testing in conjunction with a 14-day period of sheltering-in-place and self-isolation. This approach is appropriate when all embarking personnel are able to obtain PCR tests, shelter-in-place effectively at home, and travel safely from home to the isolation lodging.

Fourteen days prior to desired boarding date:

- Obtain a coronavirus RT-PCR test and engage in disciplined shelter-in-place at your home
- If the test result is positive, seek medical guidance and notify your supervisor as soon as possible
- If the test is negative, continue sheltering in place

Six days prior to desired boarding date:

- Obtain an RT-PCR test and check into a self-isolation hotel. Do not leave the hotel room, and avoid all contact with other people.
- If test is positive, seek medical guidance and notify your supervisor as soon as possible
- If negative, continue self-isolation

Two¹ days prior to desired boarding date:

- Obtain a final RT-PCR test
- Remain in self-isolation until test results are available, which is anticipated to require 48 hours
- If negative, proceed directly to ship using transportation that minimizes risk of infection
- Comply with the ship's COVID-19 prevention measures
- Stay aboard ship, never leaving until the seagoing project is completed (scientists and technicians) or you are relieved at the end of your rotation (mariners)

¹ The timing of this test depends on the period of time required until test results are available. Currently this requires 48 hours. If the turnaround time decreases substantially, the testing day may be shifted later.

EXAMPLE 2: MISSIONS OF ONE DAY IN LENGTH ABOARD R/V ROBERT GORDON SPROUL

In this example, a mission involves one or more consecutive day-trips conducted round-trip out of San Diego with ten scientists and two technicians. The vessel will continuously be within a half-day steam to home port. A plan is designed to keep coronavirus off of our ship using COVID-19 testing in conjunction with a 14-day period of sheltering-in-place to minimize COVID-19 risk in a manner commensurate for day-trip missions, recognizing the ready availability of access to health care should there be an illness aboard. This approach is appropriate when all embarking personnel are able to obtain PCR tests, shelter-in-place effectively at home, and travel safely from home to the isolation lodging.

Fourteen days prior to desired boarding date:

- Engage in disciplined shelter-in-place at your home

Two days prior to desired boarding date:

- Obtain an RT-PCR test
- If test is positive, seek medical guidance and notify your supervisor as soon as possible
- If the test is negative, you may plan to board the vessel at the port of embarkation. In the interim, continue to shelter-in-place

Day of desired boarding date:

- Use protective practices when travelling to the vessel
- Comply with the ship's COVID-19 prevention measures

If a project uses successive day-trips:

- For projects involving successive day-trips that return to port the end of each day, participants may be tested prior to the initial day and then follow shelter-in-place practices overnight between day-trips.
- Use protective practices when travelling to/from the vessel
- Comply with the ship's COVID-19 prevention measures

EXAMPLE 3: QUARANTINE BY COHORT ABOARD VESSEL

In this example the objective is to establish the vessel within a "bubble" in which there is no coronavirus present. A plan is designed in which all hands move aboard as a cohort and undergo quarantine and COVID-19 testing. This approach is appropriate when a vessel transitions from a maintenance period to an operational seagoing posture.

Fourteen days prior to establishment of seagoing posture:

- Obtain a coronavirus RT-PCR test and if negative move aboard vessel
- If the test result is positive, seek medical guidance and notify your supervisor as soon as possible
- Follow all shipboard disease transmission prevention measures (See Article 4 below), and comply with any additional ship-specific COVID-19 prevention measures.

Two days prior to establishment of seagoing posture:

- Obtain a coronavirus RT-PCR test
- If the test result is positive, seek medical guidance and notify your supervisor as soon as possible

Day of establishment of seagoing posture:

- With the notification of a second negative PCR test result for all hands, and completion of the 14-day quarantine period, the entire shipboard cohort will be cleared to conduct seagoing operations
- Stay aboard ship, never leaving until the seagoing project is completed (scientists and technicians) or you are relieved at the end of your rotation (mariners)
- Comply with the ship's COVID-19 prevention measures

EXAMPLE 4: LONG AND REMOTE MISSIONS

In this example, a 50-day mission is conducted round-trip out of a U.S. port (not San Diego), with 30 scientists and six technicians. The ship's crew has already been through a quarantine process and is resident on board. The mission involves work in regions more than a five day steam from port. A plan is designed to keep coronavirus off of our ship using COVID-19 testing in conjunction with a 14-day period of self-isolation. This approach is appropriate when all embarking personnel are able to obtain PCR tests and commit to fourteen days of self-isolation prior to embarking.

Fourteen days prior to desired boarding date:

- Obtain an RT-PCR test and check into a self-isolation hotel. Do not leave the hotel room, and avoid all contact with other people.
- If test is positive, seek medical guidance and notify your supervisor as soon as possible
- If negative, continue self-isolation

Two¹ days prior to desired boarding date:

- Obtain a final RT-PCR test
- Remain in self-isolation until test results are available, which is anticipated to require 48 hours
- If negative, proceed directly to ship using transportation that minimizes risk of infection
- Comply with the ship's COVID-19 prevention measures
- Stay aboard ship, never leaving until the seagoing project is completed (scientists and technicians) or you are relieved at the end of your rotation (mariners)

• ¹ The timing of this test depends on the period of time required until test results are available. This example assumes test results within 48 hours. If a longer period is required for test results, the final test date may be shifted earlier so that results are in hand prior to boarding the vessel.

4 Shipboard Disease Transmission Prevention

The following actions shall be taken to mitigate against the spread of disease:

Communicate the risk and prevention practices

Ongoing risk communication is an important aspect of the outbreak response. Infection control should be a ship-wide effort, driven by the Master, Chief Engineer and Chief Mate, and reinforced by Chief Scientist and Marine Technicians. Raising the crew's and science parties' awareness, accurately communicating risk, and educating all on infection control measures is critical.

- Include COVID-19 as a topic in the pre-cruise meeting, ship safety brief, and daily briefs to crew and science.
- Post signage throughout the ship alerting personnel to prevention practices. This shall include how to wear facial coverings, use tissues to cover nose and mouth when coughing or sneezing, disposal of tissues and other contaminated items in designated waste receptacles, and how and when to perform hand hygiene.

In general, the best way to prevent transmission of respiratory pathogens is to avoid contact with droplets or secretions of saliva, mucus and tears.

Wear a facial covering

- All persons on board shall wear a face covering at all times (with specific exceptions listed below). This is required because physical distancing is not consistently achievable aboard ship. Surgical masks and N95 respirators are not recommended for routine use, because they are needed for specific activities (for instance, in the ship's hospital). A cloth mask is recommended for routine use. Masks shall have the following characteristics:
 - Be made of cloth
 - Fit snugly but comfortably against the side of the face
 - Be secured at all times, using ties or ear loops or wrapping around the neck
 - May not use bandanas or other loose face coverings or mask with an exhalation valve
 - Allow for breathing without restriction
 - Be able to be laundered and machine dried without damage or change to shape
 - Be laundered after each day's use
 - If you wish to bring a supply of surgical-style or KN-95 masks, that is acceptable, but you must use a new fresh mask each day.
- Exceptions to the face covering requirement are limited to
 - Activities related to the preservation of life and safety at sea
 - Eating or drinking on the mess deck, bathing or sleeping
 - Inside your stateroom alone with the doors closed

Practice personal hygiene and wellness

- Wash your hands frequently, for at least 20 seconds.
- When soap and water are not available, sanitize your hands using a hand sanitizer that contains a minimum of 60% alcohol.
- Avoid touching your face. If you must, wash your hands first.
- Avoid touching items that others have touched (e.g., drink containers, eating utensils, cigarettes, spittoons, etc.).
- If you cough or sneeze, use a tissue and throw it away immediately. If you don't have a tissue, use the inside of your elbow.
- Each day, conduct a mindful assessment of your personal health. If you feel ill in any way, immediately isolate yourself from others and alert the Master.

Maintain situational awareness

- Avoid persons who have symptoms of respiratory illness, such as coughing, sneezing or a runny nose.
- Notice whether people around you exhibit respiratory symptoms, and if they do, refer them immediately to the Master for evaluation and treatment.

- Reinforce consistently appropriate hygiene with your shipmates by knowing and following all the rules yourself, and by reminding others when they lapse. If a shipmate points out your own lapse, thank them for the reminder -- and correct your own behavior.

Enforce strict environmental sanitation and disinfection practices

- Sanitation and disinfection of our ships on a routine basis is imperative to minimize viral particle accumulation on surfaces. We will practice meticulous infection control and disease prevention measures according to well-established CDC guidelines.
- Disinfection shall be conducted regularly on surfaces that are touched by more than one person, using a cleaning solution approved for neutralizing coronavirus.
- Cleaning frequencies will be determined by load, with emphasis on frequently touched surfaces (e.g., doorknobs, light switches, toilets, coffee pots, etc.) and high-traffic common areas (e.g., quarterdeck, bridge, mess areas, galley).

Enforce sanitation and hygiene measures regarding exercise equipment

Exercise is recognized as an important activity. The ship's gym and exercise equipment shall be subject to use and hygiene measures in order to remain open. To meet these measures, exercise equipment use should be regulated via a sign-up process.

- Only one person may be present in an enclosed gym space at a time.
- Each user must sanitize equipment before and after use.
- When possible, exercise outdoors. If exercising outdoors, maintain six-foot physical distance from others at all times.
- Cloth masks shall be worn during exercise

Define and work within cohorts

The shipboard environment presents a unique challenge to containing COVID-19 because of the close quarters and enclosed spaces. For this reason, health measures must be adapted to the shipboard environment. Small, segregated cohorts decrease the probability of the spread of COVID-19. To the extent possible the following measures should be implemented:

- Divide the ship's crew and the embarked science party into work groups (cohorts) that, as much as possible, do not interact with one another while in an enclosed space. To minimize physical interaction between cohorts, observe the following:
 - Cohorts should be assigned based on workspace, duties and shifts.
 - Cohorts should be as small as possible, but do not all need to be the same size. Size will likely be different depending on the role of the personnel and available berthing.
 - Cohorted teams should not mix within the confines of the ship, as much as possible. For example, individuals from different cohorts should not share personal time activities.
 - To the extent possible, observe a minimum of 6 feet apart between cohorts.
- The cohort approach prohibits all-hands gatherings. All briefings shall be conducted separately to individual cohort groups, except in instances mandated by regulatory statute.
- Cohort organization should be considered as part of the cruise planning process in advance of embarking.

Visitors: Generally prohibited with exceptions for strongly-vetted vital personnel

Once a vessel has been established within a coronavirus-free "bubble", no person can board the vessel who has not undergone the Scripps coronavirus pre-embarkation protocol.

The only exception is for individuals such as technicians or mechanics who are required to repair or maintain equipment or instruments on board. These individuals shall adhere to the following:

- Attest that they have adhered to disciplined shelter-in-place practices for the 14 days prior to coming aboard the ship
- Schedule their visit in advance with the Scripps Marine Superintendent, who will coordinate with the vessel Master to implement shipboard measures during the visit.

- Visitors must indicate to the Master in advance where they will work on board, and the path they will follow through the ship to reach their work area. They will not go anywhere else.
- On the pier prior to boarding, the visitor will be offered the opportunity to use the rest room. Then they will don a full-body tyvek suit, wash their hands, and don gloves. These items will be worn for the duration of the visit.
- The visitor must wear a UCSD-compliant facial mask at all times
- The visitor will be issued disinfecting/cleaning supplies that they will carry.
- An announcement will be made on the ship's public address system that a "Non-Bubble-Clean" (NBC) person is boarding the vessel, where the NBC will be working, and their path to the work area.
- The NBC visitor will be escorted along their route on the vessel by a person who remains 10 feet ahead, who will advise all hands to remain 10 feet from the visitor
- Visitors shall not eat on board.
- Visitors shall not use the restroom on board.
- Visitors shall maintain a ten foot distance from embarked personnel at all times.
- To the maximum extent possible, visitors will conduct their work outside or in a high-bay with the roll-up doors open. If work must be performed indoors, visitors and embarked personnel should not occupy the same enclosed space at the same time.
- When ready to leave, the NBC sanitizes their own work area. The egress route is announced on the ship's public address system. The NBC carries out their sanitizing supplies and equipment.
- The NBC's tyvek suit, gloves and mask are removed, placed in a plastic bag, which is taped shut and placed in a dumpster by the NBC.
- Two crew dressed in tyvek suits, with gloves, mask and face-shield, sanitize the egress route all the way to the bottom of the accommodation later. Hand rails are specially cleaned. When they report their work complete, access throughout the ship is restored via general announcement.
- Visitor activity shall be logged: entry to vessel, actual path through the vessel and work areas, any embarked personnel who interacted with visitor, and exit from the vessel. Entry and exit shall be logged at the gangway. The visitor shall keep a log of these activities, and submit their log to the watchstander when they exit the vessel.

Galley and mess deck measures

- All persons shall wash their hands before entering the mess deck.
- Self-service food lines shall be eliminated. Diners will enter the mess deck one-at-a-time keeping a six-foot distance. At the food service window, a cook will prepare a plate according to the diner's request. The cook will provide prepared bundles of silverware and napkins. Diners will carry their plate to tables and sit according to the mess deck spacing plan.
- Shared condiment dispensers shall be eliminated. A cook will provide single-serving condiments to diners as requested
- When finished, diners will scrape their slops into a receptacle and place their silverware and dinnerware into basins of soapy water in the scullery.
- Do not use fountain-style drinking fountains. The preferred method is for individuals to refill their own personal containers from faucets or hydration stations.
- The mug/cup rack shall be discontinued.
- Additional measures, such as permitting take-out meals to eat elsewhere on the vessel, may be instituted as necessary to facilitate efficient meal service and promote social distancing while eating.

General shipboard practices

The Master shall

- Ensure that signage is visible throughout the ship describing basic personal hygiene and sanitation.
- Provide tissues and no-touch receptacles for tissue disposal.
- Provide alcohol-based hand sanitizer dispensers in convenient locations. Where sinks are available, ensure that supplies for hand washing (e.g., soap, disposable towels) are consistently replenished.
- Where possible and allowable, latch open doors and hatches to reduce touching of knobs and handles.

- Post signage (in galleys, gyms, and other high density/high traffic areas aboard) alerting personnel to signs and symptoms of COVID-19.

Additional infection prevention guidance specific to COVID-19 should be reviewed at:

<https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment.html>

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>

Evaluation of Suspected COVID-19 Patients

All Masters must be familiar with current CDC Information for Healthcare Providers (<https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html>), including information to guide evaluation of those suspected of being infected with the virus that causes COVID-19.

Symptoms of COVID-19 may appear 2-14 days after exposure to the virus. People with these symptoms may have COVID-19:

- Cough
- Shortness of breath or difficulty breathing
- Fever
- Chills
- Muscle pain
- Sore throat
- New loss of taste or smell
- Less common symptoms include nausea, vomiting, or diarrhea

The following are emergency warning signs for COVID-19. If someone is showing any of these signs, seek emergency medical care immediately:

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion
- Inability to wake or stay awake
- Bluish lips or face

This list is not all possible symptoms. CDC guidance should be reviewed frequently for new diagnostic information.

Please consult the Master regarding any symptoms that are severe or are concerning to you.

Support of ill personnel

If people only have mild respiratory symptoms and have not visited an area where COVID-19 has been reported within the past 14 days, or if they have been in close contact with someone with respiratory symptoms who has been to a place which has COVID-19, they shall enter self-isolation themselves and observe basic hygiene and sanitary measures until fit.

Cases requiring further examination are generally considered to be:

- A. A patient with acute respiratory illness (one or more symptoms of COVID-19), and with no other set of causes that fully explains the clinical presentation. This patient also has a history of travel to or residence in an area reporting local transmission of COVID-19 during the 14 days prior to the onset of the symptoms.
- B. A patient with any acute respiratory illness (one or more symptoms of COVID-19) and having been in contact with a confirmed or suspected COVID-19 case during the 14 days prior to the onset of the symptoms.
- C. A patient with severe acute respiratory infection (one or more symptoms of respiratory disease e.g. cough, shortness of breath) and requiring hospitalization and with no other set of causes that fully explain the symptoms.

Those who are suspected as having COVID-19 shall enter self-isolation themselves and observe basic hygiene and sanitary measure. The Master shall consult the vessel's shore-based medical provider and Marine Superintendent at earliest opportunity for continuing treatment and guidance.

5 Infection Control for Suspected COVID-19 Patients

Anyone evaluating and managing patients at risk for COVID-19 must use the following procedure. This procedure shall be implemented upon first encountering a potentially infected person:

- Ensure that anyone with symptoms consistent with COVID-19 don a mask immediately, and continue to wear a mask until evaluated by Master or instructed otherwise.
- Individuals with symptoms of a respiratory infection shall adhere to respiratory hygiene and cough etiquette, hand hygiene, and other infection control procedures at all times (as described in Section 2 of this document), but especially before, during, and after evaluation.
- Provide supplies to perform hand hygiene to all patients upon arrival to the physical examination.
 - Ensure rapid triage and isolation of patients who may have COVID-19 infection.
 - Develop and implement procedures to identify patients without exposing others to the virus.
 - Isolate at-risk patients immediately.
 - Ensure that all patients are asked about the presence of respiratory symptoms.
 - Ensure that all patients are asked about any history of travel to areas experiencing transmission of COVID-19, and any history of contact with a possible or known COVID-19 patient (especially within the 14 days prior to onset of symptoms).
 - Immediately isolate an individuals who is suspected for COVID-19, and ensure that the patient is provided a mask.
- If there are multiple patients, consider cohorting these patients by placing them in an area completely separated from non-respiratory patients while awaiting evaluation.

6 Infection Prevention for Shipboard Healthcare Providers

Shipboard healthcare personnel evaluating, or potentially exposed to, suspected COVID-19 patients are advised to utilize standard precautions, contact precautions, droplet precautions and airborne precautions, to include eye protection (e.g., goggles or a face shield). The following shall be adhered to:

Hand Hygiene

- Examining personnel shall perform hand hygiene before and after all patient contact, contact with potentially infectious material, and before donning and doffing PPE (including gloves).
- Hand hygiene in healthcare settings should be performed by washing with soap and water for at least 20 seconds. If soap and water are unavailable, alcohol-based hand sanitizer (ABHS) may be used; however, if hands are visibly soiled, soap and water should always be used.
- If ABHS is used, ensure that the product contains at least 60% alcohol if there is any concern for COVID-19.

Personal Protective Equipment (PPE)

All crew shall be trained in, and demonstrate understanding and proficiency regarding: required PPE specific to COVID-19; when to use that PPE; how to properly don, use, and doff (remove) PPE; how to properly dispose of, disinfect, and maintain PPE; and limitations of PPE.

Any reusable PPE must be properly cleaned, decontaminated, and maintained after and between uses.

PPE shall be donned prior to entering an exam room or space where suspected COVID-19 patients are present. PPE should be doffed before exiting the space, with the exception of facial coverings, which should be removed after exiting the space and closing the door.

The following PPE shall be used when evaluating, or potentially exposed to, patients at risk for COVID-19 infection:

Gown

- Don a clean isolation gown before entry into the patient room or area; change or discard the gown if it becomes soiled.
- Remove and discard the gown into a dedicated waste or linen container before leaving the patient room or care area.
- Disposable gowns should be discarded after use; cloth gowns should be laundered after each use.

Respiratory Protection

- When evaluating patients at risk for COVID-19, use respiratory protection, at minimum a surgical mask. If training has been provided and fit testing completed, use a NIOSH-certified, disposable N95 filtering facemask respirator.
- Don the N95 respirator before entry into the patient room or care area.
- Doff the respirator after exiting the patient's room or care area and closing the door.
- Do not touch the front of the respirator when doffing; perform hand hygiene immediately after removal.
- Disposable respirators should be discarded in a designated receptacle (see final bullet regarding "extended use" or "limited re-use").
- Respirator use must be incorporated into a complete respiratory protection program.
- All crew shall be fit tested before using respirators with tight fitting facemasks (e.g., a NIOSH-certified, disposable N95), and shall be trained in proper use, safe removal and disposal, and medical contraindications to use.
- Circumstances may dictate re-use of disposable, single-use N95 respirators. Crew shall consult CDC guidance regarding extended use, and limited re-use, of N95 respirators at:
<https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>

Eye Protection

- Splash-proof goggles or disposable face shields that cover the front and sides of the face shall be utilized whenever evaluating a patient at risk for COVID-19.
- Don eye protection before entering the patient exam room or care area.
- Doff eye protection before leaving the exam room or care area.
- Reusable eye protection (e.g., goggles) must be cleaned and disinfected according to manufacturer's reprocessing instructions prior to re-use. Disposable eye protection shall be discarded in a designated receptacle after use.

Gloves

- Perform hand hygiene, then don clean, non-sterile gloves before entry into the exam room or care area.
- Change gloves if they become torn or heavily contaminated.
- Remove and discard gloves before leaving the exam room or care area, and immediately perform hand hygiene.

Additional CDC guidance for infection prevention and control in healthcare settings, specific to COVID-19, can be found at:

<https://www.cdc.gov/coronavirus/2019-nCoV/hcp/infection-control.html>

Step-by-step written and pictorial CDC guidance for properly donning and doffing PPE can be found at:

<https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf>

7 Isolation of Suspected COVID-19 Patients While Underway

The general guiding principle is to consider, plan for, and implement any reasonable measures that mitigate the spread of respiratory pathogens beyond the initial case or cluster of cases aboard ship:

- An N95 or higher level respirator shall be used by crew caring for patients with COVID-19. If N95 respirators are not available, use a surgical mask. Measures that may need to be considered during periods of expected or known N95 respirator shortages are discussed at
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/crisis-alternate-strategies.html>
- Immediately place a surgical mask (not an N95 respirator) on any patient suspected of COVID-19 infection.
- Place any patient of concern for COVID-19 in the best available isolation room/space, with the door closed.

- Label all points of entry accordingly (**RESTRICTED ENTRY: Patient in isolation. Authorized personnel only**).
- Single patient rooms are preferred for patients with possible COVID-19 infection. When single patient rooms are not available, or such capacity is likely to be quickly exceeded, the Master should have a tiered plan in place for isolation / separation / restriction of movement. At a minimum, if planned capacity is exceeded, the Master shall consult with the shore based medical provider to assess the various risks associated with potential patient placement options.
- Apply the following principles for prioritizing patient placement:
 - Prioritize the most restrictive available isolation/separation for patients who are most actively symptomatic (e.g., have heavy, productive cough).
 - Cohort patients who are suspected of being infected with the same pathogen (and who are otherwise suitable roommates).
- For patients of concern in multi-bed rooms, make every attempt to maximize distance between patients (ideally, at least 6 feet). Staggering bunks and head-to-toe sleeping arrangements can help to achieve this. Additionally, place physical barriers between patient beds (e.g., drawing curtains between patient beds, draping bed sheets over bunks/racks without curtains, etc.).
- Adjacent heads should be secured, and use restricted to the isolated patient(s). Clearly instruct crew and well patients to avoid use.
- All non-patient personnel who enter the patient room/area must don appropriate PPE prior to entry (see Section 5 above). Master shall post signage to this effect at point of entry.
- If possible, change PPE (with exception of N95) and perform hand hygiene between contacts with patients in the same isolation room/area.
- Doff all PPE (with exception of N95) before exiting the patient room/area. Master shall post signage to this effect at point of exit.
- Use disposable or dedicated patient care equipment (e.g., stethoscopes, blood pressure cuffs, etc.), to the maximum extent possible.
- If use of common equipment for multiple patients is unavoidable, clean and disinfect such equipment before use on another patient.
- Prioritize cleaning and disinfection of isolation/separation rooms and spaces, ensuring those spaces are frequently cleaned and disinfected. Cleaning and disinfection should be conducted at least daily, and/or prior to use by another patient. Prioritize cleaning and disinfecting high-touch surfaces and equipment in the immediate vicinity of the patient.
- Meals should be delivered to isolated/separated patients by personnel wearing appropriate PPE. Meal trays and utensils shall be handled using appropriate PPE, and properly cleaned before handling by other personnel.
- Avoid transporting of patients outside of the room to the maximum extent possible. Isolated or separated patients should only be moved out of medical for operational necessity. If movement outside an isolation area is necessary, ensure that patients wear a facial mask, and escorts wear appropriate PPE. Transportation equipment and transit areas will be disinfected appropriately immediately after use/transit.
- Minimize patient visitors. Any visiting personnel shall wear appropriate PPE, and should avoid direct contact with the patient(s). All visitors must communicate with, sign in, and be cleared by ship's officers or Master before and after visiting the patient room/area. Each ship will create a visitor log to track any further patient contact.
- Maintain, and clearly label, trash bags for patient disposables.
- Collect disposable soiled material and PPE in a sturdy, leak-proof plastic bag that is labeled, taped and not reopened. Although not biohazardous or regulated medical waste, these materials shall be incinerated if possible.
- Laundry should also be collected in a sturdy, leak-proof plastic bag that is tied shut prior to transport to the laundry facilities. Laundry is thought to present minimal risk for transmission of COVID-19 if handled and cleaned properly. Additional laundering guidance can be located from the CDC at: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cleaning-disinfection.html>
- Depending on the type of surface, as well as other local environmental conditions, coronaviruses may survive on surfaces from two hours to nine days; therefore, when receiving ships provisions in port or

at sea it is unnecessary to immediately remove items from boxes to wash and sanitize (e.g. fruits and vegetables) as this may result in premature spoilage of the product.

Disposition of Suspected COVID-19 Patients from Isolation

The understanding of the period of transmissibility, or maximum infectious period, of COVID-19 is evolving. Decisions regarding the duration of isolation/separation should be made using the most up-to-date epidemiologic and clinical information. The Master will consult both A) shoreside medical authority and B) the Marine Superintendent before deciding to release a patient at risk for COVID-19 from isolation.

8 Shipboard Environmental Cleaning and Disinfection Specific to COVID-19

EPA-approved viral pathogen products that claim efficacy against emerging viral pathogens are recommended for use for surface decontamination procedures against SARS-CoV-2, to include products containing a minimum of 0.5% sodium hypochlorite, 70% ethyl alcohol, quaternary ammonium compounds, or 0.5% hydrogen peroxide. If there are no available EPA-registered products available that have an approved emerging viral pathogen claim for COVID-19, products with label claims against human coronaviruses should be used according to label instructions.

A list of registered Environmental Protection Agency (EPA) approved disinfectants for use against SARS-CoV-2, see:

<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

It is sufficient to use an EPA-approved hospital-grade disinfectant solution (e.g., bleach, Lysol® IC, Cavicide®) to disinfect all high-touch surfaces such as telephones door handles, handrails, heads, berthing spaces, gyms, galleys, and any other potentially contaminated surfaces or spaces. Wipe formulations of virucidal agents are for single use only, and should be disposed of immediately after use.

CDC guidance regarding disinfection for COVID-19 can be found at

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

Always follow manufacturer's label regarding use (including dilution, contact time, care in handling, and appropriate PPE). In addition, consult with the MSDS prior to use of a specific product. If there are questions regarding the correct disinfectant or solution to use, contact your shore medical authority and the Marine Superintendent for guidance.

The following disinfection guidance for controlling norovirus aboard ship can be used for COVID-19 disinfection:

Step 1: Cleaning/Sanitation: Clean high use surfaces using a detergent or soap and warm water prior to disinfection.

Step 2: Disinfection/Decontamination: Recommendations for shipboard disinfection are to use either household bleach or an HTH solution. A minimum of 5000 parts per million (ppm), or 0.5%, is the required minimum solution concentration to kill COVID-19. If preparation is required, solutions shall be prepared daily or as directed based on manufacturer guidance. Containers should be clearly labeled with the solution, date, and time of preparation.

In general, discard prepared solutions after 24 hours, unless specific guidance states otherwise.

- I. Household Bleach solution (starting with 8.25% Sodium Hypochlorite)
 - a. Ensure the solution is prepared by personnel wearing proper PPE, in a well-ventilated space that is absent of any flammable material.
 - b. Take 1 part concentrated solution (e.g., a concentrated solution consisting of 8.25% sodium hypochlorite, such as unscented Clorox®) and add 15 equal parts of water, to make a 5,000 ppm, or 0.5%, disinfecting solution.
 - c. Apply to surfaces and observe a contact time of 10 minutes.
 - d. After contact time has passed, remove any residual disinfectant solution with a clean, damp cloth.
 - e. Discard prepared solutions after 24 hours.
- II. HTH solution (starting with 70% Calcium Hypochlorite Granules)

- a. Ensure the solution is prepared by personnel wearing proper PPE, in a well-ventilated space that is absent of any flammable material. Consult the Chief Engineer if needed.
- b. Dissolve 1 oz. of HTH granules into 1 gallon of warm (80° F -100°F) water, to make a 5,000 ppm, or 0.5%, disinfecting solution. Stir or shake until the granules are no longer visible. If some granules persist after vigorous shaking, once solution has settled, pour off the supernatant into small buckets or spray bottles. If no granules remain, transfer prepared solution into small buckets or spray bottles.
- c. Apply to surfaces and observe a contact time of 10 minutes.
- d. After contact time has passed, remove any residual disinfectant solution with a clean, damp cloth.
- e. Discard prepared solutions after 24 hours.

If there is any concern for active transmission of COVID-19 aboard ship, disinfection utilizing the above methods shall be immediately conducted in all high-traffic and/or high-volume areas (e.g., gyms, berthing, heads, galleys, passage-ways, high-volume workspaces, etc.). Disinfection shall be conducted, at a minimum, daily to minimize persistence of any viral particles. Regular cleaning and disinfection shall continue until all concern for transmission of COVID-19 is over, per the shore medical authority.

The Master, in conjunction with Chief Engineer, Chief Mate, Chief Scientist, Senior Cook and embarked Research Technicians will oversee, enforce, and verify compliance with all recommended disinfection measures on a frequent basis.

9 Shipboard Laboratory Testing and Handling Specific to COVID-19

If a patient is suspected of having COVID-19, contact the Marine Superintendent for specific guidance on COVID-19 testing options.

CDC laboratory safety guidance specific to COVID-19 can be found at <https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html>

In addition, the following shipboard-specific recommendations apply:

- Evaluate for other common respiratory pathogens (including influenza), as available.
- Per current CDC guidance, COVID-19 specimens should be collected from two locations – upper respiratory tract (through use of a nasopharyngeal swab) and (if possible) lower respiratory tract. For patients who develop a productive cough, sputum should be collected and tested for COVID-19. The induction of sputum is not recommended.
- Most likely operational constraints will prevent obtaining preferred specimens.

10 Case Reporting, Medical Surveillance, and Contact Investigation

In port, the Master should immediately notify the Marine Superintendent in the event of a suspected case of COVID-19. The Nimitz Marine Facility will assume reporting for local or state health departments, SIO chain-of-command, federal agencies and UNOLS.

For underway ships, notify your shore based medical service provider of any suspected person under investigation for COVID-19, and further reporting will be determined as indicated. In accordance with the International Health Regulations (2005), the Master of the ship must immediately inform the competent health authority at the next port of call about any suspect case of COVID-19. For ships on international voyage, the Maritime Declaration of Health (MDH) shall be completed and sent to the competent authority in accordance with the local requirements at the port of call.

Masters must facilitate application of health measures and provide all relevant public health information requested by the health authority at the port. Masters shall provide to the port health authorities all information essential (crew list and science party list) to conduct contact tracing when a confirmed case of COVID-19 has been identified on board.

COVID-19 is spreading rapidly through multiple communities. While it may not be possible to prevent COVID-19 from entering the ship, it is possible to minimize risk through basic public health preventive measures. Pre-screening of all embarked personnel is an important tool to minimize that risk. All embarking personnel will be asked about symptoms, travel to places experiencing community spread, and contact with a suspected or known COVID-19 case. No one with any of these risk factors will be

permitted to embark unless the individual has been 3 days post symptoms OR 14 days post travel or has had no contact with a known COVID-19 case, or has completed UCSD approved test protocol and is negative.

11 International Health Regulations and Ship Quarantine

Prior to pulling into a foreign port, the Master must complete a Declaration of Health Certificate, which must document any current infectious conditions or disease transmission onboard.

Although COVID-19 is not on the list of quarantinable communicable diseases at this time (based on Executive Order 13295 of 4 Apr 2003), the recent Federal Quarantine Orders issued by HHS effectively justify their inclusion. A suspected COVID-19 case or outbreak may prevent your ship from entering port. When instituting quarantine measures, or reporting COVID-19 via the Declaration of Health, the Master should consult with the Marine Superintendent.

12 Patient Movement

Suspected or confirmed COVID-19 patients which may need to be transported off the ship via air, sea, or ground transport should be managed in accordance with the following: (1) CDC Emergency Medical Services Guidance (<https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-for-ems.html>), and from expert opinion. These guidelines should not be considered all-inclusive, and should be viewed in the appropriate context should they conflict with higher guidance, or more restrictive local policies and procedures. Though they are written for aircraft transport, these recommendations also apply to ground transport as well.

General guidance:

- a. Patient and patient escort will wear the proper PPE (see Sections 2 and 5).
- b. Crew members not providing patient care shall remain at least 6 feet away from the patient; crew members providing any patient care support requiring them to be within 6 feet of the patient shall don PPE comparable to patient care staff as discussed in Section 5 including fit tested N95 (or comparable) respirators
- c. Once the patient is transferred and released from care, patient escort and crew members shall remove and discard PPE and perform hand hygiene. Used PPE shall be discarded as described in Section 5.
 - i. Keep nonessential equipment away from the patient to minimize contamination.
 - ii. Follow standard operating procedures for containing and laundering used linen. Avoid shaking the linen.