

PPE Recommendations

ACEP Guidelines on Personal Protective Equipment

While the American College of Emergency Physicians Health Care Guidelines for Cruise ship Medical Facilities does not currently address the specific minimum requirement of personal protective equipment, needed for regular sailing or a pandemic situation, the ACEP guidelines do stress the specific medical needs of a cruise ship are dependent on variables. These factors will modify the applicability of these guidelines especially with regards to staffing, medical equipment and the ship's formulary. One of these variables could be considered the current changing worldwide public health environment.

The Definition of Personal Protective Equipment

As quoted by the Occupational Safety and Health Administration "Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses." In the healthcare setting and during a pandemic like Covid-19, the following PPE is used to prevent contact with the infectious agent and body fluids that may contain the infectious agent. While these forms of PPE are generally used for this purpose in a health care setting, current recommendations do exist for the use in general public.

CDC Standard Precautions for all patient care

Standard Precautions are used for all patient care. They're based on a risk assessment and make use of common-sense practices and personal protective equipment use that protect healthcare providers from infection and prevent the spread of infection from patient to patient.

- Perform hand hygiene
- Use PPE whenever there is an expectation of possible exposure to infectious material
- Follow respiratory hygiene/cough etiquette principles
- Ensure appropriate patient placement
- Properly handle and properly clean and disinfect patient care equipment and instruments/devices
- Follow safe injection practices including proper handling of needles and other sharps

PPE on Cruise ships

The World Health Organization and the Centers of Control Disease Management recommend that health care workers, cleaners and patients should be utilizing personal protective equipment. At this time, some individual health authorities and countries have enforced additional mandatory use of PPE within the public setting, however this has not been widely adopted.

It is important for Health Care Providers (HCP) to perform hand hygiene before and after removing PPE. Hand hygiene should be performed by using alcohol-based hand sanitizer that contains 60-95% alcohol or washing hands with soap and water for at least 20 seconds. If hands are visibly soiled, soap and water should be used before returning to alcohol-based hand sanitizer.

The following recommendations are based on guidance from the World Health Organization.

Setting	Personnel	Activity	Type of PPE
Health Care Setting			
Patient Room/Treatment areas	Health Care Workers/Hit Squad or Sanitation Team	Providing direct care to suspected or confirmed Covid-19 patients	N95 Mask Gown Gloves Eye Protection (googles or face shield) Apron
	Cleaners	Sanitation of any room of suspected Covid-19 cases	Medical mask Gown Gloves Eye protection Boots/Closed work shoes
Consultation rooms/Waiting rooms	Health Care Workers	Physical examination/contact with patients with respiratory symptoms	Medical Mask Gown Gloves Eye Protection
	Health Care Workers	Physical examination/contact with patients without respiratory symptoms	PPE according to standard precautions and risk assessment. If in doubt wear PPE
	Patients with respiratory symptoms	Any	Move to separate room Medical Mask
Other areas of patient transit	All staff	Any activity that does not directly involve suspected Covid-19 patients	No PPE recommended
Administrative Areas	All staff	Administrative tasks that do not involve patient contact	No PPE recommended
Shipboard			
Guest and Crew Areas	Cleaners	Sanitation of areas with suspected Covid-19 cases or general public areas effected	Medical Mask Gown Gloves Eye Protection Boots/Closed toed shoes
	Laundry	Sanitation of linen from suspected Covid-19 cases or during outbreak	Medical Mask Gown Gloves Eye Protection Boots/Closed toed shoes
	Waste Management	Disposal of medical waste or soiled waste from suspected Covid-19 cases	Medical Mask Gown Gloves Eye Protection

Personal Protective Equipment Explained

Gloves

- Provides protection to the hands for health care workers or workers with potential exposure to infectious products or bodily fluids.
- Non-sterile examination, nitrile, powder free gloves can be used. Sterile gloves should be used only by medical personnel while conducting sterile procedures.
- Gloves should be well fit to the individual
- Gloves should have long cuffs, reaching well above the wrist, ideally to the mid forearm
- Each ship should ensure there is a range of sizes to ensure fit for all staff
- DO NOT touch your face while wearing gloves and limit touching unnecessary surfaces
- Change gloves frequently
 - o In the medical setting after every patient or if soiled
 - o While cleaning after any contact with potential contaminated surfaces or once soiled
- Hands MUST be washed thoroughly for 20 seconds or longer with soap and water after removing gloves. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.

Fluid Resistant Gowns/Tyvek Coveralls

- Provides protection to the skin and/or clothing
- Currently no clinical studies have been done to compare the efficacy of gowns vs coveralls and both have been used effectively by healthcare workers during patient care. Coveralls may become more effective for non-medical workers in the cruise ship environment such as cleaners or laundry stewards, where changes are not as frequent.
- When using gowns, it is important to have enough overlap of the fabric so that it wraps around the body to cover the back (ensuring that if the wearer squats or sits down, the gown still protects the back area of the body).

Gowns	Coveralls
Not full coverage, usually to mid-calf and open back. More familiar to medical professionals	360 coverage, including head and feet in some versions
Wrap around full coverage with tie at the back, barrier protection built into certain areas of the gown	Zipped at the front of the coverall and must have a protective flap at the completion of the zip for barrier protection
Easy to put on and take off	Requires very specific removal technique to avoid contamination, usually with 2 people
Limited heat stress while wearing	Higher heat stress due to coverage




Due to the ease of use, in the cruise ship setting we recommend the use of gowns, where possible, rather than coveralls however coveralls could be sourced where gowns become unavailable. The following CDC guidance explains the various gowns available, all of which can be considered for use onboard a cruise ship.

- While the transmissibility of COVID-19 is not fully understood, gowns are available that protect against microorganisms. The choice of gown should be made based on the level of risk of contamination. Certain areas of surgical and isolation gowns are defined as “critical zones” where direct contact with blood, body fluids, and/or other potentially infectious materials is most likely to occur).
- If there is a medium to high risk of contamination and need for a large critical zone, **isolation gowns** that claim moderate to high barrier protection can be used.
- For healthcare activities with low, medium, or high risk of contamination, **surgical gowns** can be used. These gowns are intended to be worn by healthcare personnel during surgical procedures.

If the risk of bodily fluid exposure is low or minimal, gowns that claim minimal or low levels of barrier protection can be used. These gowns should not be worn during surgical or invasive procedures, or for medium to high risk contamination patient care activities.

Masks/Respirators

- Provides protection for the mouth and nose

Type	N95 Masks/FFP2/Respirators	Surgical/Medical Masks	Cloth Masks
			
Use	Reserved for Healthcare workers or first responders in direct contact with suspected Covid-19 cases	Patients, Cleaning staff and Close contacts not in direct contact with microorganisms and body fluids	Not currently mandated however recommended by the CDC for people in the general public
	Requires a very close facial fit to be highly effective. Designed to create a seal and does not collapse against mouth	Loose fitting, not designed to create a seal	Not a replacement for preventative measures such as hand washing and social distancing
	Protect both patient and health care worker on the transfer of microorganisms and body fluids	Help block particles droplets, splashes, sprays that may contain germs. May not provide complete protection due to the loose fitting	Worn in public settings
	Single Use	Single Use	Multi use however must be laundered after each use

Goggles

- Provides protection to the eyes
- Should fit snugly over and around the eyes with a good seal with the skin and the face, the front and sides must be protected from splashes or respiratory droplets
- Personal glasses should not be used as a substitute for goggles
- Made from a flexible PVC frame which easily fits all face contours with even pressure
- Accommodates wearers with prescription glasses, clear plastic lens with fog and scratch resistant treatments and adjustable band to secure firmly.
- May be reusable provided appropriate arrangements for decontamination are in place
- EU PPE Regulation 2016/425 • EN 166 • ANSI/ISEA Z87.1 or equivalent

Face shields

- Provides protection to the face, mouth, nose and eyes when skin protection is also required.
- When dealing with respiratory patients the same protection can be achieved by using a mask and goggles.
- Particularly useful in the health care setting when dealing with copious amounts of secretions.
- Should cover forehead, extend below the chin and wrap around the side of the face
- Made of clear plastic and providing good visibility to both the wearer and the patient
- Adjustable band to attach firmly around the head and fit snugly against the forehead, fog-resistant (preferable).
- Completely covers the sides and length of the face.
- May be re-usable (made of robust material which can be cleaned and disinfected) or disposable.

Recommended PPE Stockpile Levels

Based on the current guidance the following items of PPE should be maintained, as a minimum, this supply should be separate from regular medical inventory and stored, clearly marked in a separate storage space either onboard the vessel or in a shoreside facility, with a one step process for immediate shipment. During recent outbreaks, PPE supplies were depleted quickly due to poor control of appropriate PPE. To ensure control and appropriate use of PPE, all items should be clearly marked with purpose of the PPE. Each ship will need to identify a single crew member that holds the responsibility to manage, track and distribute the outbreak supplies to the appropriate departments.

- N95 Masks
- Surgical Masks
- Goggles/Face Shields
- Fluid resistant gowns/Tyvek Coveralls
- Gloves

Evidence from outbreaks amongst cruise ships suggests a possible outbreak effecting up to 17% or the total population. Overall quantities of outbreak PPE supplies should be determined at the individual cruise operator level, with consideration given to size of the vessel, possible infection rate and total number of medical staff onboard. Your Vikand Shipboard Medical Operations Manager and Vikand Leadership Team will work with you on an individual basis to determine appropriate quantities of PPE.