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KEY POINTS

- Cruise ships can be amplifiers of infectious diseases because of the close human proximity of semiclosed ship environments.
- The most common diagnoses of cruise passengers evaluated in cruise ship infirmaries include upper respiratory infections, injury, seasickness, and gastrointestinal illness.
- Cruise ship passengers may experience clusters of brief self-limited diarrheal disease, although this rate is much lower risk than on land.
- Certain groups, such as the elderly, pregnant women, and immunocompromised, might be more seriously affected by infectious diseases and stress of travel.
- Ensure the traveler has medical insurance (health and repatriation) that covers conditions in international waters.

INTRODUCTION

Cruise ship travel has gained tremendous popularity over the last four decades. In 2016, 24 million passengers on 448 ships sailed on worldwide cruises. Cruise destinations such as the Caribbean and Mediterranean have gained popularity due to climate as well as accessibility to many ports. The ever-expanding cruise itineraries (including 184 river cruise ships), which include diverse ports of call, along with a growth in the number of embarkation ports and onboard amenities, provide travelers with convenient and comfortable means to sample different parts of the world in a short amount of time.

With the growing popularity of recreational cruises, gastrointestinal (GI) and respiratory disease outbreaks may be amplified by the densely populated, semiclosed cruise environment, which compels international passengers and crew to share many activities and resources. Moreover, passengers can acquire a new infectious disease while in port through contaminated food, water, or infected people. Environmental contamination of cruise ships may result in protracted outbreaks due to infected crew and passengers who remain onboard during successive voyages. Sanitation and disease surveillance programs developed through the cooperation of the cruise industry and public health agencies have led to improved detection and control of communicable diseases. Understanding the most frequently reported diseases on cruise ships, their source and mode of transmission, prevention measures, and available ship medical care facilities can lead to better preparedness for a healthy cruise vacation.

THE CRUISE INDUSTRY

The North American Cruise Industry

Ships carrying 13 or more passengers are considered under international law to be passenger ships. They include sailboats, yachts, river cruise ships, and ocean cruise ships. Sailboats and yachts are best known for niche travel, such as “eco-touring.” River cruises are popular for providing an informal, intimate atmosphere while traveling to places such as the Nile and the Amazon. Ocean cruises make up the greatest portion of ship-based leisure travel, with the North American cruise industry accounting for the major part of the global ocean cruise market. The North American cruise industry consists of cruise lines that market cruises primarily to North Americans but have embarkation ports worldwide. The Caribbean remains the top cruise destination, followed by Alaska, the Mediterranean, and other parts of Europe. Depending on the type of cruise, the duration can range from hours (e.g., gambling cruises) to several months (e.g., round-the-world cruises). The average duration of a cruise is 9 days, and approximately 58% of cruising passengers choose 6–8-day cruises. The typical 7-day cruise allows passengers ample time to visit three to five ports and explore different locales and cultures.

The Passengers and Crew

Compared to US residents on noncruise vacations (defined by those spending ≥3 nights away from home for leisure trips), cruisers tend to be older (49% are >50 years of age), have higher income levels, and are likely to plan a vacation 4–6 months in advance, allowing time for pretravel health preparation. A typical cruise ship will have a passenger-to-crew ratio of around 3 to 1. Cruise ships employ crew from around the world: on average, 50 nationalities will be represented in a crew of 1200. The origin of crew will depend on the cruise line and their designated occupation on the ship. Crew members may stay aboard a cruise ship for months on successive voyages, carrying out specialized tasks with the aim of achieving higher quality service.

CRUISE HEALTH, SANITATION, AND SAFETY REGULATIONS

International Regulations

In 2005 the World Health Organization (WHO) revised the International Health Regulations (IHR) (in force in 2007) for international regulations and standards binding 194 countries. The overall goal of the revised ISR is to support ship and port sanitation, disease surveillance, and
Abstract
Cruise ships can be amplifiers of infectious diseases because of the close human proximity of semiclosed ship environments. The most common diagnoses of cruise passengers evaluated in cruise ship infirmaries include upper respiratory infections, injury, seasickness, and gastrointestinal illness. Cruise ship passengers may experience clusters of brief self-limited diarrheal disease, although this rate is much lower risk than on land. Certain groups, such as the elderly, pregnant women, and immunocompromised, might be more seriously affected by infectious diseases and stress of travel. Ensure the traveler has medical insurance (health and repatriation) that covers conditions in international waters.

Keywords
Cruise ship health care guidelines
Cruise ship travel
Influenza
Legionella
Norovirus
response to infectious diseases (www.who.int/ihr/en). Safety regulations for international shipping, including cruise ships, are promulgated by the International Maritime Organization (IMO) in its International Convention for Safety of Life at Sea (SOLAS). SOLAS addresses a variety of issues pertaining to passenger and crew safety, including fire protection, lifesaving equipment and procedures, and radio communications.

**US Regulations**

The Centers for Disease Control and Prevention (CDC) Vessel Sanitation Program (VSP) (http://www.cdc.gov/nceh/vsp/) has the responsibility for ensuring appropriate levels of sanitation and health aboard cruise ships arriving at US ports, including facilities that could affect public health, such as food storage, ventilation systems, and pools or spas (www.cdc.gov/quarantine/index.html). VSP conducts unannounced, biannual sanitation inspections of US-bound cruise ships that have international itineraries. A score of at least 86 (out of 100) is considered a pass and is published monthly in the “Summary of Inspections of International Cruise Ships” (http://www.cdc.gov/InspectionQueryTool/InspectionGreenSheetRpt.aspx). Other than acute gastroenteritis (AGE) requirements, all international passenger conveyances bound for the United States are legally required to report to US Quarantine at least 24 hours before arrival any ship cases with certain febrile syndromes suggestive of a communicable disease and any deaths. Diseases on the list are primarily those with pandemic potential such as influenza, severe acute respiratory syndrome (SARS), or plague (https://www.cdc.gov/nczid/dgmq/quarantine-fact-sheet.html).

**MEDICAL CARE ABOARD CRUISE SHIPS**

Cruise Lines International Association (CLIA) member cruise lines follow the “Health Care Guidelines for Cruise Ship Medical Facilities” developed by the American College of Emergency Physicians (ACEP) Cruise Ship and Maritime Medicine Section. This ACEP section is composed primarily of physicians actively involved in cruise ship medicine. Their objective is to advance the capabilities of cruise ship medical facilities and the quality of medical care provided aboard cruise ships. The guidelines address standards for medical facility design, medical staff qualifications, diagnostic equipment, and formulary selection, with a goal of providing general and emergency medical services to passengers and crew.  

Medical care aboard cruise ships is designed to provide cruise line passengers and crew members with timely access to comprehensive services for minor to severe illness and injury (Fig. 40.1) as they would be at an urgent care clinic during daytime emergencies or a free-standing emergency department (ED). More serious problems (such as myocardial infarction, respiratory distress, or cerebrovascular accidents) may require emergency evacuation to an appropriate shore-side facility after stabilization on board.

Most modern cruise ships are equipped to perform a variety of laboratory tests (which may include complete blood count, blood sugar, electrolytes, chemistry, cardiac enzymes, pregnancy testing, and urinalysis), radiography, cardiac monitoring, and advanced life support procedures. The ship’s formulary includes medications for treating common medical problems and a variety of more serious conditions, including infections, injuries, respiratory distress, and cardiac disorders.

**ILLNESS ON CRUISE SHIPS**

The spectrum of illnesses occurring aboard cruise ships generally follows land-based incidences. It can vary depending on the demographics of passengers and crew on board. Two studies involving retrospective reviews of cruise ship medical logs showed that about half of all passengers seeking care aboard cruise ships were older than 64 years.

**Respiratory tract infection** was the most common diagnosis, followed by injuries, nervous system problems (e.g., seasickness), and GI illness. About 90% of illnesses on cruise ships were not considered serious or life threatening, but of those that were, asthma, arrhythmia, angina, and congestive heart failure were among the most common. In other studies, cardiac death rates ranged from 0.6 to 9.8 per million passenger-nights. More than 95% of ill persons seen by the medical clinic were treated definitively on board and 5% required consultation or disembarkation for shore-side medical care.

Documented outbreaks of infectious diseases aboard cruise ships have most commonly been related to GI (norovirus) and respiratory infections (influenza, Legionella). Clusters of illnesses related to vaccine-preventable diseases (other than influenza) such as rubella and varicella have also been reported.

**Respiratory Infections**

Upper respiratory tract infections are the most frequent diagnosis in cruise ship medical facilities, accounting for approximately 20%–30% of passenger visits. The semiclosed and crowded environment of cruise ships may allow for increased person-to-person transmission of respiratory viruses. In addition, ship resources such as contaminated whirlpools or water supply, and even infected crew or passengers remaining onboard for multiple voyages, may serve as reservoirs for respiratory pathogens, causing continuous transmission of illness on consecutive cruises. The two most frequently documented etiologic agents of cruise ship–related pneumonia outbreaks are *Legionella* and influenza viruses (see Chapter 59).

**Influenza.** Influenza A and B outbreaks among the cruise ship crew and passengers can occur throughout the year, even when seasonal influenza activity is absent in the region of the cruise. The convergence and intermingling of international crew and passengers from parts of the world where influenza is in circulation can lead to the introduction and rapid amplification and spread of influenza aboard ships. Vaccination of most crew members annually helps with secondary infections. Substantial morbidity may result from cruise influenza outbreaks owing to the presence of a large percentage of elderly and chronically ill passengers, both of whom are at higher risk for complications and death due to influenza infection.
Also, health care providers can play an important role in preventing influenza and other respiratory disease outbreaks aboard ships by:

- Asking travelers to refrain from traveling while ill, and if illness develops during the trip to practice respiratory hygiene measures and minimize contact with other people, including the cruise staff.
- Providing vaccination or, if necessary, prophylactic antiviral medication, especially to high-risk populations as well as their close contacts, and those traveling in large tour groups, even if travel occurs during summer.

**Legionnaires Disease.** The most commonly established causes of outbreaks include contamination of ships’ water supply, air conditioning systems, or spa pools. 16 The largest documented culture-confirmed cruise ship outbreak of legionnaires disease occurred in 1994. It involved 50 passengers during nine separate sailings of the same ship. 4 Illness due to infection through bacteria-laden aerosols generated by the spa was associated with immersion in, and spending time around, the whirlpool. This outbreak was detected 3 months after it began, when a New Jersey physician notified the state health department that three hospitalized patients with atypical pneumonia had been on the same cruise ship; this outbreak highlighted the delay in detection of cruise-associated legionnaires disease. Symptom onset is typically 2–10 days postexposure without person-to-person spread. Most cruise ships have urinary antigen testing capability.

**Gastrointestinal Illness**

The estimated likelihood of contracting gastroenteritis aboard a 7-day cruise is <1%. 10.14 Acute gastroenteritis accounts for <10% of passenger visits to a ship’s infirmary. 11 Cruise outbreaks of AGE due to bacterial and viral pathogens, particularly noroviruses (NoV), are well recognized. 14 The number of outbreaks of AGE on cruise ships has increased since 2002 owing to the worldwide resurgence of NoV (see Chapter 20).

**Waterborne Diseases.** A review of data from cruise ship waterborne disease outbreaks during 1970 to 2003 showed that enterotoxigenic *Escherichia coli* (ETEC) was the pathogen most frequently linked to cruise ship waterborne GI outbreaks. 15 Other organisms that may cause waterborne GI outbreaks on cruise ships include *Salmonella* spp., *Shigella* sp., *Cryptosporidium* spp., *Giardia intestinalis*, and NoV. Due to closely regulated water testing on all ships that enter North American ports, most waterborne outbreaks after 2003 have originated from water sources off the ships (such as fruit and vegetables acquired from unsafe sources in various ports of call). Crew members working in food preparation can occasionally be sources of these clusters of illness as well as person-to-person spread.

**Foodborne Diseases.** An epidemiologic review of cruise ship foodborne disease outbreaks that occurred from 1970 to 2003 showed that 82% were caused by bacterial pathogens and the rest by viruses, parasites, or unknown sources. Of the last 10–15 years, bacterial foodborne outbreaks causing illness on cruise ships have been eclipsed in number by NoV/AGE outbreaks!

Cruise dining typically offers elaborate meals consisting of a large assortment of foods, which usually involve preparation by multiple food handlers and in many steps, resulting in an increased chance of food mishandling and contamination. 16

**Norovirus.** NoV is the most common cause of viral gastroenteritis and AGE in the United States, with 23 million cases yearly. 11,14 NoV is transmitted via the fecal-oral route, directly person to person, from contaminated food and water, or by contact with contaminated surfaces or objects. Aerosolized vomit has also been suspected as a mode of transmission. Updates of outbreaks are posted on VSP’s website (www.cdc.gov/nceh/vsp/surv/gilist.htm) on all ships calling on US ports. More than 90% of GI outbreaks investigated by VSP with a confirmed cause are due to NoV. 16,22

During NoV outbreaks on cruises the original source of infection may be an infected person or food. Further spread, resulting in large numbers of illnesses, mainly occurs by person-to-person transmission of the virus. 16 Most NoV outbreaks can be characterized by high attack rates, a high prevalence of vomiting, short duration of illness, and confirmation with polymerase chain reaction (PCR) techniques. The key to controlling the spread of NoV on cruise ships is the rapid implementation of infection control measures at the first signs of an AGE outbreak; these include hand-washing before eating and after bathroom use plus frequent cleaning of common areas, staterooms, elevator buttons, and hand rails, and limiting guest contact with serving utensils in buffet lines during the first 2 days of the cruise. Also it is recommended that ill passengers seek medical care in the ship’s medical center as soon as GI symptoms develop (see Fig. 40.1). 17

**MISCELLANEOUS**

**Vaccine-Preventable Diseases (VPD)**

In addition to influenza, cruise ships have had outbreaks of other routine vaccine-preventable diseases (VPD) such as rubella and varicella. Most often such illnesses are traced to crew originating from developing countries in which immunity to routine VPD may be low. The densely populated environment of cruise ships and the social interactions between crew and passengers allow for person-to-person spread of VPD among susceptible persons. Pregnant women—along with other potentially susceptible groups of cruise travelers such as the elderly, the immunosuppressed, and children—need to check their immune status to routine VPD before travel. Measles, mumps, rubella (MMR) and varicella vaccines are not provided ubiquitously for all employees on cruise ships, and unvaccinated crew members may serve as a potential reservoir for these diseases to high-risk travelers.

**Injuries**

After respiratory infection, injuries are the second most common reason for passengers to seek medical care aboard cruise ships, accounting for 18% of infirmary visits. 10 The most common injuries seen are sprains, contusions, and superficial wounds. Reported cruise-related injuries occur most frequently on decks and stairs, in passengers’ own cabins, or ashore during port calls. 18 Some of the most severe injuries occur during tendering procedures.

**Seasickness**

Most cruise itineraries tend to sail in the calm waters of the Caribbean or the Mediterranean. Modern cruise ships are also constructed with roll stabilizers that minimize turbulence. Even so, seasickness is a common concern of many cruise travelers and is among the top four reasons for infirmary visits. 10 Some passengers are sensitive to motion and require pharmacologic prevention and treatment with antihistamines, anti-muscarinic, or antidopaminergic agents’ (see Chapter 46). Alternative medicines may also help some individuals. Ondansetron (Zofran) is generally not as helpful. The association between passenger cabin location and risk of motion sickness is controversial, but a common perception persists that central cabins near the waterline are the least seasickness inducing. Passengers who can readily lie down can reduce their risk for motion sickness irrespective of their cabin location. Additionally, elderly passengers should be cautioned about the overuse of even over-the-counter medications that may affect balance, mental status, or urinary function.
**Health Preparation and Prevention Measures for Cruise Travel in Large/Small Vessels**

Pretravel health preparation for cruise travel can be challenging because of planned visits to multiple countries and participation in a variety of shipboard and shore-side activities/excursions. In making health risk assessments, health care providers should consider a broad range of issues. These include the travelers’ health condition and immunity to routine VPD, including influenza, pneumococci (≥65s), MMR (two lifetime vaccinations unless born prior to 1957 in the United States and 1970 in Canada), the need for special immunizations and chemoprophylaxis based on the cruise ship’s itinerary, and health-related risk behaviors during cruise travel. Cruise ship passengers should be encouraged to consult a travel health advisor 4–6 weeks prior to travel for appropriate recommendations. A commonly overlooked risk occurs with the shore excursions off the ships! Smaller vessels carrying <13 guests have many of the same risks and treatment options requiring additional planning, including resources for medical assistance at sea, travel safety information, medications/protocols for treating common illnesses, water disinfection, insect precautions, vaccine information, information about medical and evacuation insurance, first-aid kits, and worldwide health care resources. The International Society of Travel Medicine maintains a list of travel clinics online at [www.istm.org](http://www.istm.org).

**Pretravel**

During pretravel counseling, clinicians should carefully review the traveler’s medical conditions to assess whether they can endure the stress of travel and whether they have any special health needs (e.g., wheelchair access, gangways are often inadequate/unsafe for morbidly obese guests), oxygen (concentrators much preferred), or dialysis). Women who will be ≥24 weeks’ gestation on the final day of cruise are not accepted for travel on most cruise lines. Cruise travel can expose travelers to infectious agents, pollutants, changes in diet, physical exertion, extremes of weather, and other conditions that can exacerbate chronic medical conditions. Cruise ships built during the past 10 years generally have some cabins designed to accommodate wheelchairs. Information regarding wheelchair access can be obtained from the individual cruise lines or the CLIA website. Depending on the medical condition, some cruise lines may require that the traveler have a travel companion. Assisted-living type of care must be provided by the passenger. Medical facilities on most modern cruise ships are comparable to those of a land-based urgent care center, some much better; however, limitations and variability in the level of care available exist between cruise lines and individual ships—and at shore-side hospitals during port stops. For this reason, and to protect the health of others on board, passengers with acute medical problems or those who acquire an infectious disease before travel should be encouraged to postpone travel and call the cruise lines to discuss alternatives. Cancellation insurance may be purchased from the cruise line.

Gaps in regular coverage require additional travel insurance that can often be found in a travel package offered by cruise lines, usually costing 4%–10% of the total package price. However, if only supplemental medical evacuation insurance is needed, the cost can be as low as $100 per person for a single trip or $400 for 1 year of family coverage.

**During Travel**

Health care providers should remind cruise passengers experiencing GI symptoms to report immediately to the ship’s medical facility and not self-medicate, to limit spread to others. Exercising health-conscious behavior during the journey is very important. Travelers should use caution in selecting the food and water they consume and should practice good hygiene (wash hands, cover coughs and sneezes, etc.) to reduce their risk of becoming ill from an infectious disease. Regular use of hand sanitizers (often readily available aboard ship) before meals is important.

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**BOX 40.1 Health Care Provider Checklist: Pretravel Health Preparation of Cruise Ship Travelers**

| Review | Presence of acute medical complaints
| Past medical history (presence of chronic illnesses)
| Medication list
| Vaccination history: Routine (see Chapter 10)
| Special travel (see Chapters 11, 12, 13, typhoid, rabies, yellow fever, Japanese encephalitis, meningococcal)
| Travel itinerary and style of travel—countries to be visited during stops and activities
| Assess | Medical feasibility of travel
| Cruise ship facilities: [https://www.cruising.org/cruise-vacationer/learn-about-cruising/frequently-asked-questions](https://www.cruising.org/cruise-vacationer/learn-about-cruising/frequently-asked-questions)
| Cruise ship sanitation score: [http://www.cdc.gov/ncelh/vsp/desc/about-inspections.htm](http://www.cdc.gov/ncelh/vsp/desc/about-inspections.htm)
| Recent or ongoing gastrointestinal outbreaks on ship: [http://www.cdc.gov/ncelh/vsp/surv/gilist.htm](http://www.cdc.gov/ncelh/vsp/surv/gilist.htm)
| Health risks and needs based on itinerary: [https://wwwnc.cdc.gov/travel/destinations/list](https://wwwnc.cdc.gov/travel/destinations/list)
| Vaccines required (routine and others based on itinerary):
| Routine: [http://www.cdc.gov/vaccines/pubs/ACIP-list.htm; www.cdc.gov/travel/destinat.htm](http://www.cdc.gov/vaccines/pubs/ACIP-list.htm; www.cdc.gov/travel/destinat.htm)
| Malaria chemoprophylaxis (see Chapter 15, based on itinerary) (same resources as above)
| Insect repellent (based on itinerary and shore-side activities) (same resources as above)
| Provide to/discuss with traveler:
| Adequate supply of all medication (ship’s formulary is limited and adequate supply for entire cruise is necessary, controlled meds in original prescription bottle). Hand-carry and do not place in checked luggage
| Written and/or electronic/applications including “Can I eat this,” “TravWell,” and “2016 Yellow Book”—personal medical information (include patient demographics, health and travel insurance, contact information of health care provider and next of kin, medical history, current medications and pertinent lab data [EKG])
| Routine immunizations, if not up to date (see Chapters 10 and 13), especially for children
| Other immunizations if indicated (see Chapters 11, 12, 13, based on itinerary)
| Malaria prophylaxis/Zika prevention if indicated (see Chapters 7 and 15, based on itinerary, altitude)
| Influenza antiviral medication (See [https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6001a1.htm](https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6001a1.htm), based on risk assessment)
| Guidance about mosquito prevention (see Chapter 6)
| Guidance about sun protection
| Travel advice—pretravel health preparation, during travel healthy habits, and after travel follow-up (see Box 40.2)
BOX 40.2  Travel Health Advice for Cruise Ship Travelers

Before Cruise Travel
Notify cruise ship of special medical needs (e.g., wheelchair access, bariatric equipment, oxygen concentrators, food allergies/sensitivities, dietary restrictions, injectable medications such as insulin/syringes for sharps containers or refrigeration, scooter access/storage/charging); see Chapter 9
Wheelchair assistance for embarking/disembarking is generally available but should be requested in advance. Medical equipment during cruise including wheelchairs, concentrators, continuous positive airway pressure equipment, etc. needs to be requested from an approved vendor well before sailing (e.g., Special Needs at Sea, http://www.specialneedsatsea.com/)
Clients with medical/electronic equipment should ensure voltage of the ship is compatible and cabins have enough outlets; extension cords/surge protectors may need to be packed
Ensure adequate insurance coverage for air ambulance (AA) medical evacuation for North American travelers ($50K), transcontinental AA transport ($40K min), Caribbean ($50K min), Hawaii ($100K min), Hawaii to California AA ($>60K), Ushuaia to Miami ($>100K), Europe ($100K min), Asia/Africa/Antarctica ($200K min). Many travel insurance policies (such as most cruise line plans) have limited medical coverage ($10K–$20K). Travelers should carefully assess their potential risks and needs when choosing a travel insurance plan for a cruise itinerary. For a few dollars more, they can obtain $50K+ medical coverage and $500K+ evacuation coverage. InsureMyTrip.com and Squaremouth.com are two travel insurance sites that offer a variety of plans from several insurance companies.
Prepare first-aid kit (see Chapter 8)
Infants <6 months cannot travel on most CLIA vessels and some sailings require infant be 1 year old on or before day cruise starts
Postpone travel if illness develops
Obtain mosquito prevention (with DEET, icaridin/permethrin); see Chapter 6

During Travel (While on Cruise Ship and Ashore)
To prevent getting foodborne and waterborne diseases:
Ensure all food consumed is thoroughly cooked
Inquire about use of pasteurized eggs for foods with eggs as main ingredient (e.g., flan, omelets)
Evaluate the risks of eating any food, especially off the ship
Ensure correct temperature of cold and hot foods
Ensure prepackaged food for shore-side excursions is stored at appropriate temperature
To prevent spread of infection:
Follow good hand hygiene:
• Wash hands frequently with soap and water
• If soap and water not available, alcohol-based disposable wipes or gel sanitizers containing at least 60% alcohol may be used
Follow good respiratory hygiene:
• Cover mouth and nose with tissue when coughing or sneezing
• If tissue not available, cough or sneeze into upper sleeve, not hands
• Put used tissue in waste basket
• Avoid close contact with people who are sick
Report GI symptoms immediately to medical staff and do not self-medicate
Stay well hydrated by drinking water
Get plenty of rest
Avoid excessive alcohol intake

After Travel
Report to health care provider for illnesses especially with fever or respiratory symptoms (see Chapters 56 and 59)

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After Travel
Passengers should be urged to follow up with their health care provider for any fever or flulike illness that develops up to a year after travel.21 They should inquire about cruise travel in all cases of pneumonia, other respiratory illnesses, GI illnesses, or suspected communicable disease. Health care providers can help enhance surveillance and characterization of cruise-ship-associated illnesses by identifying and reporting notifiable diseases or conditions and possible clusters of diseases to public health agencies.

CONCLUSION
Since 1980 the number of cruise passengers on CLIA member lines has grown at an average annual rate of 7.4%. An estimated 25 million passengers are forecast to sail in 2017 (majority from North America).2 The occurrence of shipboard illnesses and outbreaks related to GI, respiratory, and vaccine-preventable diseases has led to improved infectious disease surveillance and control strategies by the cruise industry and public health agencies.5 Pretravel health preparations and knowledge of available medical care aboard cruise ships is important for cruise travelers, especially given that approximately one-third are senior citizens who may have chronic illnesses or who may be at greater risk for some infectious diseases.6 Because medical facilities aboard cruise ships are designed to provide basic emergency medical care, travelers should be encouraged to consult their health insurance provider regarding extra coverage while away from their home country and for medical evacuation.6,8,22
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