

Control of Suspected Norovirus Outbreaks

Background

Noroviruses are a group of viruses that cause the “stomach flu,” or gastroenteritis. The average incubation period for norovirus-associated gastroenteritis is 12 to 48 hours, with a median of approximately 33 hours. Illness is characterized by acute-onset vomiting; watery, non-bloody diarrhea with abdominal cramps, and nausea. In addition, myalgia, malaise, and headache are commonly reported. Low-grade fever is present in about half of cases. Dehydration is the most common complication and may require intravenous replacement fluids. Symptoms usually persist for 24 to 60 hours.

Noroviruses are highly contagious, with as few as 10 virus particles thought to be sufficient to cause infection. Noroviruses are transmitted primarily through the fecal-oral route, either by direct person-to-person spread or fecally contaminated food or water. Noroviruses can also spread via a droplet route from vomitus. These viruses are relatively stable in the environment and can survive freezing and heating to 60°C (140°F). In close living conditions, transmission can additionally occur through hand transfer of the virus to the oral mucosa via contact with materials, fomites, and environmental surfaces that have been contaminated with either feces or vomitus.

Specific control measures:

1. Strict hand hygiene: Personnel should wash with soap and warm water for at least 15 seconds - don't rely on alcohol-based hand sanitizers.
2. Exclude ill personnel from work until 48 hours after last symptom.
3. Disinfect: Recommend a bleach-based disinfectant for non-porous surfaces.
 - a. Minimum concentration of 1000ppm
 - i. 1:50 dilution
 - ii. 1/3 cup standard (5.25%) bleach per gallon of water
 - b. Maximum concentration of 5000ppm
 - i. 1:10 dilution
 - ii. 1 2/3 cup standard (5.25%) bleach per gallon of water
 - c. Solution should be made daily, or can be stored in a dark (light-proof) container and discarded after 30 days.
4. Clean and disinfect soiled carpeting: Visible debris should be cleaned using an absorbent material (double layer) and discarded in a plastic bag to minimize aerosols. Clean with hot water and detergent and then steam clean (158° F for 5 min or 212° F for 1 min) for complete inactivation. A professional carpet cleaning company is recommended to reduce the risk of aerosolizing virus. Dry vacuuming is not recommended.
5. Restrict ill patients to separate barracks or berthing compartments when possible. Observe contact isolation precautions.
6. Consider canceling group activities until 48 hours after last case.
7. Environmental health to review food service/disinfection practices. Pay particular attention to staff hand washing and ice machines.
8. Maintain line list: Consult binnacle list for daily monitoring of afflicted patients. Continue for 1 week after last case onset. A sample line list worksheet is available [here](#).
9. Consult the cognizant Navy Environmental & Preventive Medicine Unit or Preventive Medicine personnel for recommendations about outbreak response and reporting.
10. Report suspected cases or outbreaks via the Navy Disease Reporting System internet (NDRSi). Comment on suspected outbreaks in weekly Disease Non-Battle Injury reports as required.