

## Norovirus Contamination and Control Overview:

Norovirus is a particularly difficult virus to control as the transmission pathways includes airborne routes, fomites, human to human, food and water. Its non-enveloped morphology allows NoV to remain active when other less refractory bacteria and virus would be inactivated, such as after disinfection with common disinfectants. NoV may persist for long periods in the environment and can be spread by convalescing victims, during the prodromal period, and by asymptomatic carriers.

Therefore the control of NoV must begin very early in the outbreak in order to prevent the further spread and amplification of the virus.

Infection control procedures in place should include a sick log for employees and residents or guests, protocols to follow such as isolation, and terminal cleaning regimes that follow a risk based model, increasing in effort as cases rise. The idea being to prevent large scale outbreaks and keep small ones from fulminating.

Norovirus for all intents is a bio-hazard and environmental protection must be put into place. Whereas many NoV outbreaks begin outside the kitchen, food workers often become ill and further transmit disease. HACCP based precautions should be in place in food service and the particular risk of NoV considered in the hazard analysis and risk control plans. Pools and spas are another potential exposure route and their disinfection and filtration systems effectiveness must be evaluated. Laundry should not be neglected. Mops and other cleaning utensils require control.

Diarrhea and vomiting will be extensive and widespread in outbreaks. In the facility proper, designated, trained and properly protected and equipped personnel must be assigned to the task of decontamination. Protocols such as Sanitation Standard Operating Procedures need development and to be communicated through training.

Although proper cleaning and disinfection is central to disease control with this agent, over reliance on this alone to stem outbreaks is to be avoided. To verify cleaning, ATP or protein swabs after disinfection can reveal hot spots resisting disinfection. They may include porous, semi-porous surfaces or hard to reach micro-environments around common touch points. In large scale outbreaks, a technique of pooling NoV specimens for RT-PCR from the environment can identify NoV contaminated areas such as ballrooms, restrooms, wards, floors, or elevators. Good epidemiology during an outbreak also helps define hot spots. When hot spots are suspected, fogging the area is often a technique used. Safe chemicals and safe usage are an essential parts of the NoV control program as the chemicals needed may be concentrated and hazardous; workers and facility occupants can become ill from toxic fumes when chemicals are not used safely

Breaking the human to human transmission chain is based on personal hygiene and control of symptomatic cases. Education during outbreaks should stress the human elements and reinforce hygienic practices and especially reinforce identification and removing ill persons from the facility or isolation. In extreme cases, facilities require quarantine, closure or

evacuation and contingencies should be made.

NoV control in Hospitality and Health Care environments requires a very comprehensive approach and safety professionals in these facilities need to be themselves educated as to best practices for NoV mitigation and control.

Environ Health Associates NoV Outbreak control materials are available free of charge. Send email to [rcosta1@cfl.rr.com](mailto:rcosta1@cfl.rr.com)

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