



# SLO Public Health Laboratory Bulletin

April 2009

## Noroviruses- more than a cruise ship problem.

Recently the Public Health Laboratory has been consulted about testing for Norovirus infections in the setting of institutional outbreaks. The Norovirus outbreaks that have occurred aboard cruise ships have been particularly noteworthy for the speed of development and the number of individuals affected. What is it that makes this virus so difficult to deal with?

Noroviruses are a diverse group of RNA viruses that cause gastroenteritis, originally called Norwalk virus in a report of an outbreak of gastroenteritis that occurred in Norwalk, Ohio in 1968. These non-enveloped, small, round, structured viruses came to be known as Norwalk-like viruses and now are called Noroviruses. Outbreaks are common in closed-community settings such as long-term care facilities, hospitals, prisons, dormitories and cruise ships. Food-borne illness is common, but person-to-person transmission can occur as well. Attack rates are very high with the onset of vomiting and diarrhea usually 24-48 hours after exposure. While infections are considered mild, self-limited and rarely fatal, control of transmission can be a challenge.

An infectious dose of as few as 10-100 viral particles can initiate an infection with the cells lining the lumen of the small intestine becoming ~~ing~~ productively infected and releasing new viral particles. The number of viral particles has been reported to reach the astronomical levels of  $10^{12}$  virions per gram of stool. It is little wonder that outbreaks affect so many individuals in such short time periods.

The replication of the RNA genome is catalyzed by an RNA polymerase enzyme that makes a lot of mistakes. Each mistake or mutation can give rise to a new Norovirus variant. In fact, the virus has the potential for a new variant with each outbreak. ~~Some~~ Since many variants have been described, Norovirus is usually described in the plural form-Noroviruses. A closely related virus called Sapovirus, discovered during an outbreak in Sapporo, Japan has also been reported and is now detected quite often by leading laboratories. The epidemiologic typing of Noroviruses requires the creation of a DNA copy of the viral RNA polymerase gene followed by sequencing and on-line comparison to stored sequences at the National Library of Medicine's GenBank. New variants are reported regularly.

Control of outbreaks hinges on hygiene. The ill must be placed on enteric precautions, while surfaces that may be involved in transmission must be disinfected. Handwashing must be rigorous and thorough.

Although Noroviruses ~~has~~ ~~been~~ successfully cultured in research settings after much effort, laboratory diagnosis can be accomplished rapidly by use of reverse-transcription polymerase chain reaction (RT-PCR). The Public Health Laboratory (PHL) offers the PCR test routinely. If a public health threat is detected, the ~~Health Agency~~ PHL will test three carefully selected patient specimens to assist in the identification of the agent. Additional specimen testing can be performed on a fee-for-service basis.

## Packaging and Shipping Training—2009 information!

Packaging and Shipping Training workshops have been scheduled for August 4 at Hardy Diagnostics, in Santa Maria and August 6 at Ventura Public Health Department. CEU's are provided. Stay up to date on the latest regulations, keep your training records in order for inspections and ~~don't forget that~~ help your couriers ~~retain current need to have~~ "knowledge" of OSHA regulations and labeling. Contact Trudy Hodge for reservations and information at [thodge@co.slo.ca.us](mailto:thodge@co.slo.ca.us).

## Wet Workshop

Our highly popular **Wet Workshop** for Select Agents will tentatively be held ~~in the F~~ fall of 2009. Seating is limited to 12 students. Contact Trudy Hodge for reservations and information at [thodge@co.slo.ca.us](mailto:thodge@co.slo.ca.us).