

Norovirus Resources

- ▶ [NFSM – National Food Safety Month \(www.foodsafetymonth.com\)](http://www.foodsafetymonth.com)
- ▶ [Handwashing: Reduce the Spread of Viruses – NFSM 2016](#)



What is Norovirus?

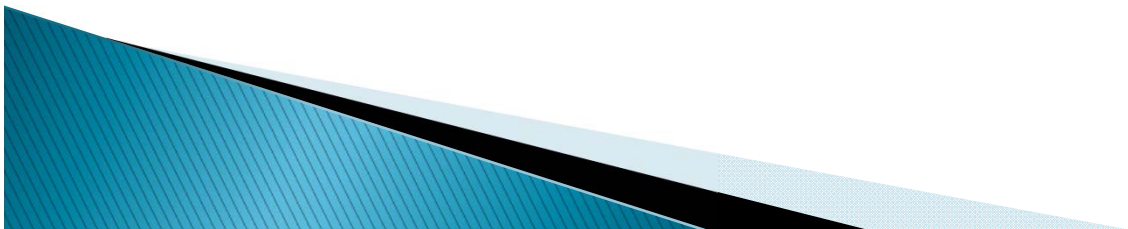
▶ Testing

- Human specimen collection–stool
- From 1985 to 1991 Norovirus was detected and classified using *antibody* based assays
 - Enzyme–linked immunosorbent assays (ELISAs)–antibody testing
 - Test not useful since most people develop antibody from subclinical infection
- 1992 to the current Norovirus detected using genomic amplification assays
 - Reverse–Transcriptase–polymerase chain reaction (RT–PCR)–*detects viral nucleic acid*
 - *Gold standard test used to confirm outbreaks*



How is Norovirus spread?

- ▶ **Fecal–Oral Route**
 - Found in stool or vomitus
- ▶ **Infection spreads by**
 - Consuming contaminated food or liquids
 - Touching contaminated surfaces or objects
 - Person–to–person contact
 - Shellfish consumption
- ▶ **Day care centers, cruise ships and nursing homes more vulnerable to both spread and effects of illness**



How is Norovirus spread?

▶ Shellfish

- Norovirus survives in Marine Water for months to years
- Oysters, clams and mussels (filter feeders) ingest norovirus present in marine water
- Once ingested virus multiplies quickly especially in warm weather or if shellfish not kept cold post harvesting
- 145 degrees F for 15 seconds or longer will inactivate virus



Symptoms

- ▶ Vomiting
 - Primary symptom
- ▶ Nausea
- ▶ Diarrhea (watery)
- ▶ Abdominal cramping
- ▶ Other symptoms
 - low grade fever (50% of all cases)
 - chills, headache, muscle aches, tiredness



Epidemiology of Norovirus

▶ Epidemiology

- Estimated 218,000 deaths to children less than 5 years worldwide
- 1.1 million hospitalizations worldwide
- United States
 - 570–800 deaths (mostly young children and elderly adults)
 - 56–71,000 hospitalizations

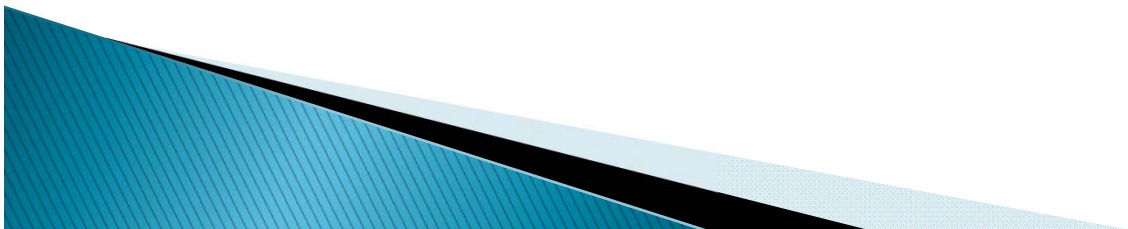
▶ Incubation period

- Averages 24–48 hours
- Average illness duration 12–48 hours



Disinfection During Outbreaks

- ▶ **200ppm (parts per million)**
 - Use for stainless steel, food/mouth contact items, toys
 - 1 Tablespoon of bleach in 1-gallon water (1:250 dilution)
- ▶ **1 000ppm (parts per million)**
 - Use for non-porous surfaces, tile floors, counter-tops, toilets, door knobs, railings
 - 1 / 3 cup bleach in 1-gallon water (1:50 dilution)



Disinfection During Outbreaks

- ▶ **5000ppm (parts per million)**
 - Use for porous surfaces, wooden floors
 - 1 cup bleach plus 2/3-cup bleach in 1-gallon water (1:10 dilution)
- ▶ **Contact time**
 - Leave bleach on surfaces for 10–20 minutes then rinse with clean water



Disinfection During Outbreaks

- ▶ **Other disinfectants**
 - Iodine (0.8%), Lysol or Pinesol (may be needed at higher concentrations)
- ▶ **Environmental Protection Agency (EPA) approved list of disinfectants**
 - Not all shown on EPA list are approved for use in **FOOD FACILITIES**
 - http://www.epa.gov/oppad001/list_g_norovirus.pdf



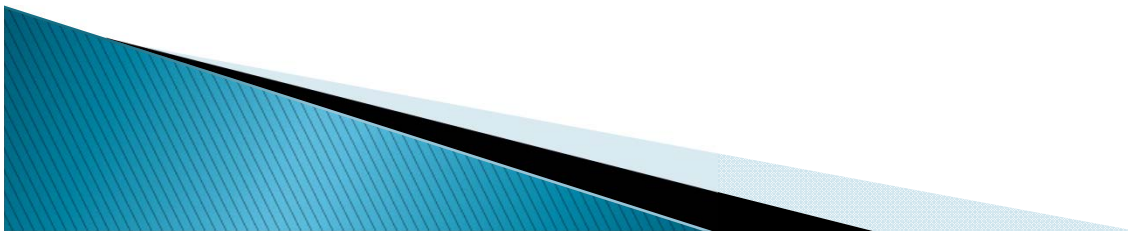
Treatment

- ▶ There is no specific treatment
- ▶ Persons with diarrhea and/or vomiting should drink plenty of liquids to prevent dehydration
- ▶ IV rehydration may be required
- ▶ Medications, including antibiotics (which have no effect on viruses) should be avoided
- ▶ Hospitalization does occur amongst vulnerable groups



Prevention

- ▶ Wash your hands frequently
 - Soap and water is the gold standard
 - Alcohol-based hand sanitizers not recommended alone (alcohol at 60% not shown to be effective against Norovirus)
- ▶ Promptly disinfect contaminated surfaces with household chlorine bleach-based cleaners (at least 1000ppm)



Prevention

- ▶ Throughout food or water from sources that may be contaminated
- ▶ Wash fruits and vegetables before preparation
- ▶ Cook shellfish completely to kill the virus greater than 145 degrees F
 - Especially true for oysters and other shellfish



Prevention

- ▶ Children in daycare, health care workers, or people who *handle food in food service facilities* should not go to school or work while they have diarrhea or symptoms
 - Until at least *3 days* after symptoms subside

