



# Infectious Disease Epidemiology Report

## Norovirus Outbreaks – Maine, 2007-2010



### Introduction

Noroviruses are viruses that cause acute gastroenteritis. What is often referred to as the “stomach flu” may actually be norovirus. Noroviruses are highly contagious and as few as 10 viral particles are sufficient to cause an infection. Several modes of transmission exist: most commonly through the fecal-oral route, but also through foodborne transmission, environmental or fomite contamination, and secondary person-to-person transmission. The multiple routes of transmission complicate the identification of a source of infection during outbreaks. Immunity to norovirus lasts only a few months and is strain-specific. Individuals may be infected repeatedly throughout their life.

Nationwide, the federal CDC estimates that more than 21 million cases of acute gastroenteritis each year are due to norovirus infection, and more than 50% of all foodborne disease outbreaks are due to noroviruses. Over 80% of norovirus outbreaks occur during November-April.

There are several strains of noroviruses. Genogroups I, II and IV infect humans. Genogroup II (GI) is the most prevalent human genogroup.

### Methods

The Infectious Disease Epidemiology Program monitors outbreaks of gastrointestinal illness. All instances of increased gastrointestinal illness in a facility or at an event are reportable. Individual reports of norovirus illness are not reportable. All reports of increased gastrointestinal illness are investigated to determine if there is an outbreak. Symptomatic individuals involved in these outbreaks are asked to submit stool or vomit samples for identification of a cause of illness.

Maine’s Health and Environmental Testing Laboratory (HETL) performs norovirus testing. HETL uses polymerase chain reaction (PCR) to determine the genogroup of norovirus, either genogroup I or genogroup II. Additional testing is available to determine the genetic strain of norovirus. The results of this testing can be compared among outbreaks to determine a pattern

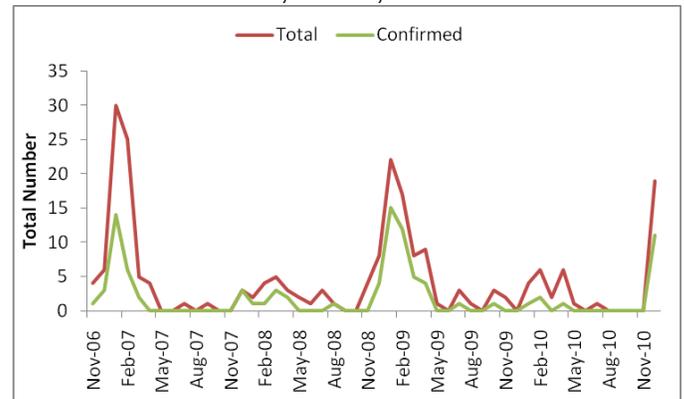
of spread and the types of norovirus circulating in the state.

An outbreak is considered laboratory confirmed in Maine if there is one or more patient specimens that test positive for norovirus. Outbreaks are considered to be suspect if the symptoms, incubation period and possible routes of transmission are consistent with norovirus infection.

### Results

Norovirus outbreaks are typically seen in Maine during the colder months of the year, from late fall through early spring.

Figure 1. Total Suspect and Laboratory Confirmed Norovirus Outbreaks, Maine, 2006-2010.



During November 2009 to April 2010, there were 16 suspect outbreaks and four laboratory confirmed norovirus outbreaks. The number of suspect and confirmed outbreaks appears to be cyclical with every other year having a higher incidence of reported outbreaks.

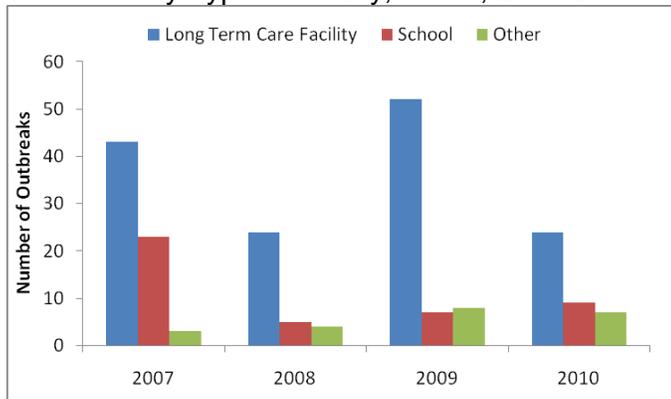
In December 2010, there were 19 reports of suspect norovirus outbreaks. Norovirus was laboratory confirmed for 11 outbreaks. Both genogroup 1 and genogroup II were detected in outbreaks in December 2010.

Outbreaks are most often transmitted by fecal-oral or secondary person-to-person contact. Outbreaks are most often reported by long term care facilities. Schools, hospitals, summer camps, and large

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events such as weddings have also experienced outbreaks.

Figure 2. Suspect and Confirmed Norovirus Outbreaks by Type of Facility, Maine, 2007-2010.



Outbreaks have occurred throughout the state, however, are more frequent in the higher populated counties in Maine.

Table 1. Suspect and Confirmed Norovirus Outbreaks by County, Maine, 2007-2010.

County	2007	2008	2009	2010
Androscoggin	4	3	11	5
Aroostook	6	2	5	0
Cumberland	15	1	12	14
Franklin	1	2	2	1
Hancock	3	0	1	1
Kennebec	5	3	14	2
Knox	1	0	1	1
Lincoln	1	3	1	0
Oxford	4	2	3	4
Penobscot	10	5	7	2
Piscataquis	0	0	2	3
Sagadahoc	5	4	0	0
Somerset	3	0	1	4
Waldo	2	2	0	1
Washington	3	1	0	1
York	6	5	6	0
<b>Total</b>	<b>69</b>	<b>33</b>	<b>66</b>	<b>39</b>

### Prevention and Control

Norovirus can be prevented by practicing these preventive measures:

- Wash hands with soap and water before and after eating or preparing food, after using the toilet, after changing diapers, and after handling animals

- In addition to washing hands, but not as a substitute for using soap and water, use alcohol based hand sanitizers containing at least 62% ethanol
- Rinse all fresh fruits and vegetables under running water
- Cook oysters and other shellfish thoroughly before eating
- Do not prepare food for others while symptomatic and for at least 48-72 hours after recovering
- Immediately clean and disinfect contaminated surfaces by using a bleach-based household cleaner
- Immediately remove and wash clothing or linens that may be contaminated with vomit or feces on the longest cycle setting and dry at the hot setting

Special steps should be taken to control norovirus outbreaks in long term care facilities or other residential settings. These control measures include:

- Cohort cases or isolate symptomatic individuals
- Close the facility to new admissions or limit new admissions
- Post signs notifying visitors of the outbreak or limit visitors, to prevent spread of illness
- Exclude symptomatic staff from work for 48-72 hours after symptoms have resolved
- Wear surgical masks when cleaning vomit or feces
- Use EPA approved disinfectants for cleaning  
<http://www.epa.gov/oppad001/chemregindex.htm>

Increased incidence/outbreaks of gastrointestinal illness should be reported by calling 1-800-821-5821. Specimens collected in an outbreak setting can be sent for norovirus testing at HETL.

For more information on norovirus:

- Maine CDC website <http://www.maine.gov/dhhs/boh/ddc/epi/disease/norovirus.shtml>
- Federal CDC website <http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus.htm>
- HETL website <http://www.maine.gov/lab>