

Norovirus Laboratory Network (NLN) Guidance for testing for the 2013-14 Norovirus Season

Background:

For this norovirus season, we are again:

1. Supplying reagents (norovirus real time PCR primers and probe, controls), technical support, and testing/genotyping at VRDL
2. Requesting a minimum of **TWO positive stool samples per outbreak** to be sent to VRDL for strain typing; **more is preferred**. In cases where stools samples are depleted or not available, nucleic acid extracts can also be submitted.
3. Requesting weekly norovirus testing data to be sent to Katharine Shimabukuro at Katharine.Shimabukuro@cdph.ca.gov and Chao Pan at CPan@cdph.ca.gov.
4. Requesting stool samples for Unexplained Gastrointestinal Illness Project. Since 2011, VRDL started testing for rotavirus, astrovirus, sapovirus, and enteric adenovirus in norovirus negative outbreaks (see graph: **Non-norovirus outbreaks distribution**). Prompt identification of the etiology of these outbreaks is important for containing spread, including isolation measures and decontamination methods.

Recommendations for NLN testing:

For the 2013-14 season, VRDL recommendations for testing by NLN laboratories include:

- Performing norovirus PCR and forwarding two or more norovirus positive stools per outbreak for strain typing.
- Reporting all results, including total number of cases tested, to CDPH on a weekly basis (see attached forms). For questions about reporting, contact Katharine Shimabukuro at Katharine.Shimabukuro@cdph.ca.gov, or 510-307-8562.
- Forwarding NEGATIVE norovirus outbreaks stool specimens (defined as no norovirus detected in ALL samples) for further testing at VRDL, which will attempt to detect other causative viral agents such as rotavirus, sapovirus, astrovirus, and adenovirus.
- A real time PCR protocol for the ABI 7500 Fast Instrument using Invitrogen PCR kit is now available. Please contact Chao Pan for distribution at Chao-Yang.Pan@cdph.ca.gov.
- **Please note: an outbreak is defined as two or more positive specimens. If your lab only tests one specimen, this does not qualify as testing an outbreak.**

Testing performed by NLN 2012-2013 and Update:

- Currently there are 27 local laboratories and VRDL with the norovirus real time PCR capability and participating in the NLN.

Participating NLN public health laboratories : Alameda, Contra Costa, El Dorado, Fresno, Humboldt, Kern, City of Long Beach, Los Angeles, Monterey, Napa/Solano, Orange, Placer, Riverside, Sacramento, San Bernardino, San

Diego, San Francisco, San Joaquín, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Shasta, Sonoma, Stanislaus, Tulare, and Ventura.

During the 2012-2013 norovirus season (November to May), the NLN reported 349 suspected norovirus outbreaks (total outbreaks), of which 232 (66%) were confirmed by real-time PCR testing (positive outbreaks). Genogroup II (GII) continues to be the predominant genogroup (94%). About half of all specimens submitted for testing were norovirus positive.

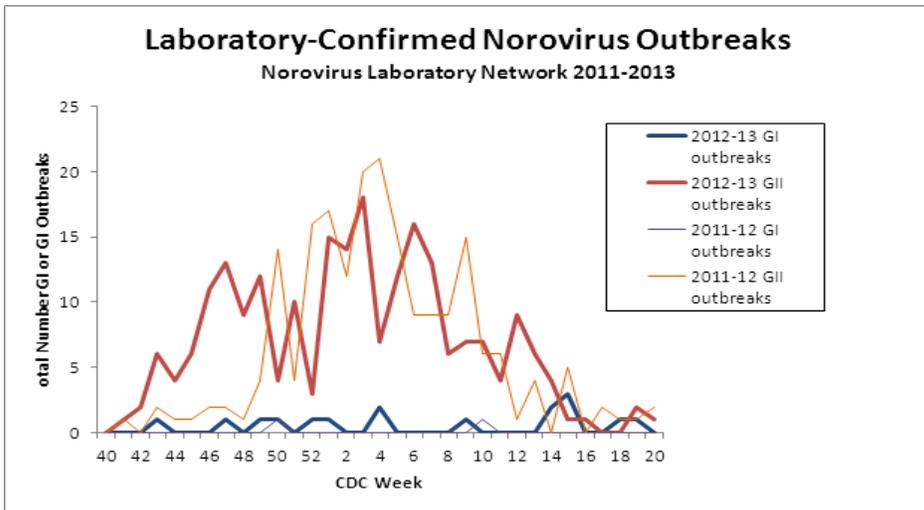
	Total Outbreaks	Positive Outbreaks	Total Specimens	Positive Specimens	GI OB	GII OB
November	66	47	259	163	1	46
December	50	36	218	133	3	33
January	85	64	434	264	3	61
February	61	40	358	177	1	39
March	52	32	233	101	1	31
April	21	8	108	33	3	5
May	14	5	89	23	2	3
Total	349	232	1699	894	14	218

Norovirus outbreak settings (Nov 2012 to May 2013)

The vast majority of Norovirus outbreaks identified in California originate in long-term care facilities (LTCF, 81%).

Seasonal Trends of Norovirus Outbreaks (2011-12 vs. 2012-2013)

Norovirus season usually sustains from early fall to early summer, with winter peaks, and with very little activity seen in the middle of the summer. A new strain GII.4 Sydney emerged in November of 2012; however, we did not see an increase in activity when compared to the previous season.



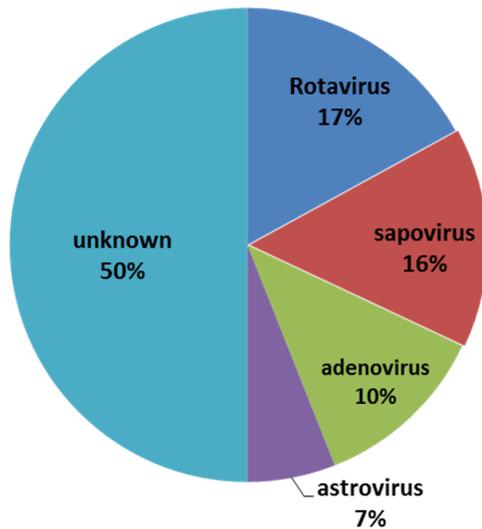
Molecular Epidemiology and CaliciNET

For outbreaks confirmed by norovirus PCR, further molecular characterization was performed at VRDL where they are amplified with primers specific for GI or GII in region D and/or C (capsid region). The amplicons are sequenced and analyzed for strain typing. VRDL submits the sequences to the CaliciNET national electronic surveillance database at CDC. Similar to PulseNet, CaliciNET allows the norovirus sequences to be compared and queried in real time, which allow faster investigation, prevention, and control of different norovirus outbreaks.

Last norovirus season, over 600 samples were submitted to the VRDL for strain typing. Norovirus genogroup II, subtype Sydney (GII.4 Sydney) emerged and replaced the previous circulating strain (GII.4 New Orleans). At the same time, a minor strain GI.6A emerged and was often seen in foodborne outbreaks.

Unexplained Gastrointestinal Illness Project

VRDL began testing for viral gastroenteritis agents other than norovirus in the summer of 2011. About 339 specimens representing 90 norovirus PCR negative outbreaks from 2007 have been tested retrospectively. About 50% of outbreaks remained unidentified. VRDL is working with CDC and UCSF to continue to investigate GI outbreaks to elucidate the causes and understand the epidemiology of these illnesses.



For questions about norovirus testing and Unexplained GI Illness Project (UGIP) at VRDL, please contact Chao Pan at Chao-Yang.Pan@cdph.ca.gov or 510 307-8548 (work).