

## **Norovirus Laboratory Network (NLN) Guidance for testing for the 2011-12 Norovirus Season**

### **Background:**

As of early November, Norovirus activity has been on the rise. For this Norovirus season, the Viral and Rickettsial Disease Laboratory will again:

1. Supply reagents (Norovirus real time PCR primers and probe) and technical support, and testing at VRDL
2. Request minimal of **TWO positive stool samples per outbreak** to be send to VRDL for strain typing; preferably at least 4 per outbreak. In cases where stools samples are depleted or not available, nucleic acid extracts can also be submitted.
3. Request weekly Norovirus testing data to be sent to Katharine King at [Katharine.King@cdph.ca.gov](mailto:Katharine.King@cdph.ca.gov)
4. Request stool samples for Unknown Gastrointestinal Illness Project. In the summer of 2011, VRDL started testing for Rotavirus, Astrovirus, Sapovirus, and Enteric Adenovirus in Norovirus negative outbreaks. 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 2011-12 season, VRDL recommendations for testing by NLN laboratories include:

- Perform Norovirus PCR and forward two or more Norovirus positive stools per outbreak for strain typing.
- Report all results, including total number of cases tested to CDPH on a weekly basis (see attached forms). For questions about reporting, contact Katharine King at [Katharine.King@cdph.ca.gov](mailto:Katharine.King@cdph.ca.gov), or 510-307-8562
- Forward 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.

### **Testing performed by NLN 2010-2011 and Update:**

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

Participating NLN public health laboratories include: Alameda, Contra Costa, El Dorado, Fresno, Humboldt, City of Long Beach, Los Angeles, Marin, 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, Tulare, Ventura, VRDL.

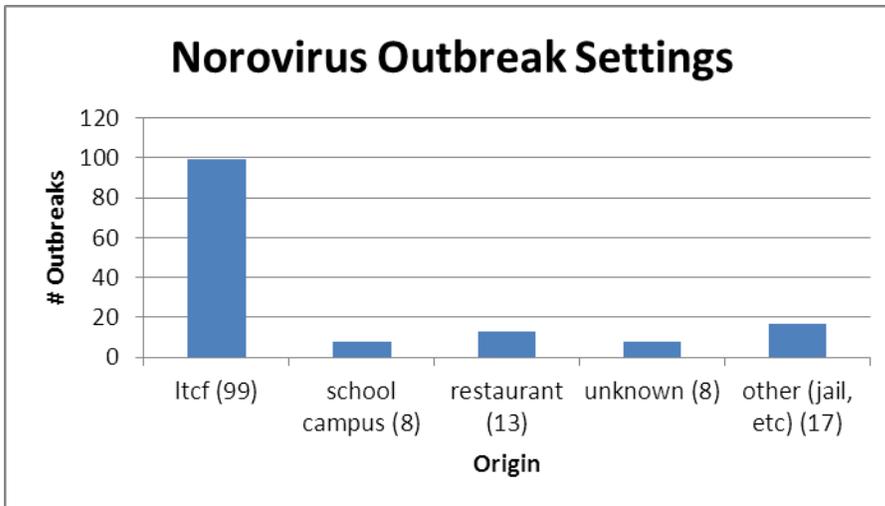
\*Yolo County has terminated laboratory operation as of September 1, 2011.

Between May 2010 and April 2011 the NLN reported 195 suspected Norovirus outbreaks (total outbreaks), of which 131 (67%) were confirmed by real-time PCR testing (positive outbreaks). Genogroup II (GII) continues to be the predominant genogroup (93%). About half of all specimens submitted for testing were Norovirus positive.

	Total Outbreaks	Positive Outbreaks	Total Specimens	Positive Specimens	GI	GII
May	27	17	123	55	2	15
Jun	25	14	117	47	1	13
Jul	7	4	41	16	1	3
Aug	1	0	19	2	0	0
Sep	6	3	28	13	0	3
Oct	4	3	30	12	0	3
Nov	12	7	56	21	0	7
Dec	27	21	138	72	0	21
Jan	17	11	86	42	0	11
Feb	14	8	73	37	0	8
Mar	37	35	160	100	5	30
Apr	18	8	83	31	0	8
<b>Total</b>	<b>195</b>	<b>131</b>	<b>954</b>	<b>448</b>	<b>9</b>	<b>122</b>

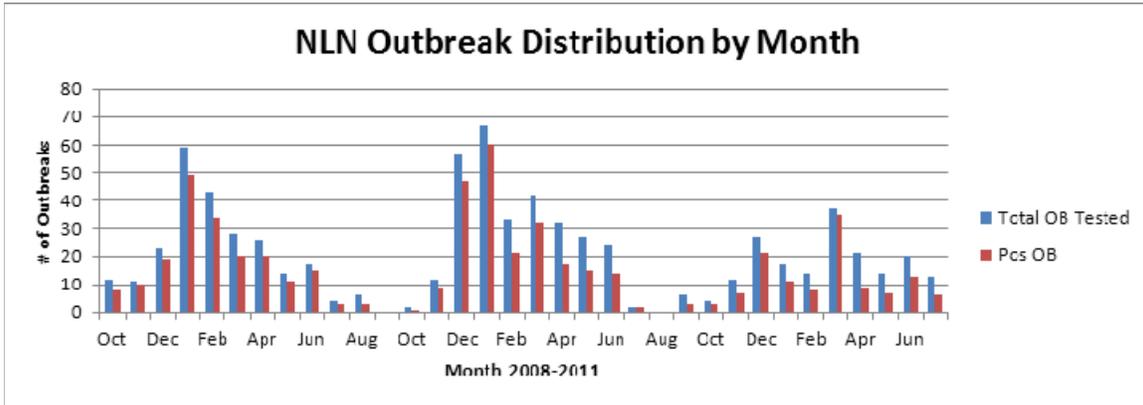
**Norovirus outbreak settings (May 2010 to April 2011)**

The vast majority of Norovirus outbreaks identified in California originate in long-term care facilities (LTCF, 68%), followed by restaurant/catering settings (9%).



**Seasonal Trends of Norovirus Outbreaks (from 2008 to 2011 season)**

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. In the 2010-2011 season, we saw fewer outbreaks compare to the 2008-2009 and 2009-2010 seasons. In late March 2011 Norovirus activities were noted throughout California.



**Molecular Epidemiology and CaliciNET**

For outbreaks confirmed by PCR to be associated with Norovirus, further molecular characterization was performed at VRDL where they are amplified with primers specific for GI or GII in region D (capsid). 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.

Between January of 2009 and June of 2011, over 500 samples were submitted to the VRDL for testing. Norovirus genogroup II, genotype 4 (GII.4) continues to be the most prevalent epidemic strain in circulation. Since early 2009, GII.4 subtype New Orleans has comprised of 75% of all strain-typed samples, with 12% being GII.4 Minerva which first appeared in 2006, became the dominant strain then replaced by GII.4 New Orleans.

**Unknown Gastrointestinal Illness Project**

VRDL began testing for viral gastroenteritis agents other than Norovirus in the summer of 2011. About 190 specimens representing 52 Norovirus PCR negative outbreaks have been tested. Rotavirus, sapovirus, adenovirus, or astrovirus were detected in samples from 20 outbreaks (most were primary school/day care setting). VRDL hopes to continue to investigate GI outbreaks to elucidate the causes and understand the epidemiology of these illnesses.

For questions about Norovirus testing and Unknown GI Illness Project at VRDL, please contact Chao Pan at [Chao-Yang.Pan@cdph.ca.gov](mailto:Chao-Yang.Pan@cdph.ca.gov) or 510 307-8548.