

## **Norovirus Laboratory Network (NLN) Guidance for testing for the 2016-17 Norovirus Season**

- **Request for CalREDIE ID's**
- **2015-16 season summary**
- **Emergence of GII.4 Sydney 2015**

### **For this norovirus season:**

1. VRDL requests a minimum of **TWO positive stool samples per outbreak** to be sent to us for norovirus strain typing; **more than 2 is preferred**. In cases where stool samples are depleted or not available, nucleic acid extracts may be submitted.
2. VRDL will supply, upon request, norovirus real-time reverse transcription polymerase chain reaction (RT-PCR) reagents (such as primers and probe and controls), technical support, and testing/genotyping. Please contact Chao Pan for more information at [CPan@cdph.ca.gov](mailto:CPan@cdph.ca.gov).
3. Protocols are available from VRDL for: 1) nucleic acid extraction with MS2 phage as an internal extraction control; and, 2) real-time PCR using the ABI 7500 Fast Instrument with the Invitrogen PCR kit. Please contact Chao Pan for more information at [CPan@cdph.ca.gov](mailto:CPan@cdph.ca.gov).
4. We are seeking your assistance in collecting and providing CalREDIE identifiers whenever possible, and NORS (National Outbreak Reporting System) ID if available. These identifiers allow the outbreaks to be monitored both at the state and national level, giving us additional abilities to track outbreaks and request additional samples or information.

### **Recommendations for NLN testing:**

For the 2016-17 season, VRDL recommends that NLN laboratories:

1. Perform norovirus PCR and forward two or more norovirus positive stools per outbreak to VRDL for strain typing.
2. Report all results, including total number of cases tested, to CDPH on a weekly basis. For questions about reporting, please contact Alice Chen at [Alice.Chen@cdph.ca.gov](mailto:Alice.Chen@cdph.ca.gov), or 510-307-8630.
3. Submit norovirus NEGATIVE outbreak stool specimens (defined as no norovirus detected in three or more samples) for further testing at VRDL for rotavirus, sapovirus, astrovirus, and adenovirus by PCR.

**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 and Update:**

Currently the NLN consists of 25 local public health laboratories and VRDL with norovirus real time PCR capability; they are: Alameda, Contra Costa, El Dorado, Fresno, Humboldt, City of Long Beach, Los Angeles, Monterey, Napa/Yolo/Solano/Marin, Orange, Placer, Riverside, Sacramento, San Bernardino, San Diego, San Joaquín, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Shasta, Sonoma, Stanislaus, Tulare, and Ventura.

During the 2015-2016 norovirus season (November to May), the NLN reported **159** suspected norovirus outbreaks, of which **108 (70%)** were confirmed by real-time PCR testing (positive outbreaks). Outbreaks were overwhelmingly caused by Genogroup II (GII) viruses (**100 out of 108, 93%**). Overall, about **57%** of specimens were norovirus positive. Data from the 2015-2016 Norovirus season are in the table below.

	Total Outbreaks	Positive Outbreaks	Total Specimens	Positive Specimens	GI OB	GII OB
November	22	13	91	53	3	10
December	47	28	145	100	3	25
January	40	31	219	119	1	30
February	22	12	92	42	1	11
March	6	5	41	20	0	5
April	15	12	84	43	0	12
May	7	7	38	25	0	7
<b>Total</b>	159	108	710	402	8	100

Reporting from NLN Labs: Number of GI Outbreaks Tested (October 2015 to July 2016)

PH Lab	# of suspected OBs tested	# of Noro OB confirmed
Alameda	9	7
Contra Costa	7	5
El Dorado	0	0
Fresno	4	2
Humboldt	0	0
Long Beach, City of	2	2
Los Angeles	62	29
Monterey	7	5
Napa/Yolo/Solano/Marin	16	11
Orange	11	6
Placer	0	0
Riverside	4	3
Sacramento	6	4
San Bernardino	1	0
San Diego	16	14
San Joaquin	8	8
San Luis Obispo	6	5
San Mateo	3	3
Santa Barbara	4	3
Santa Clara	1	1
Shasta	0	0
Sonoma	1	10
Stanislaus	0	0
Tulare	5	3
Ventura	8	8
VRDL (for Santa Cruz, Imperial, Butte)	6	4

### **Norovirus outbreak settings (Nov 2015 to May 2016)**

The vast majority of outbreak samples submitted for testing of suspect Norovirus outbreaks in California originate from long-term care facilities (81 out of 108 outbreaks, 75%). Roughly 9% of outbreaks were foodborne (10 out of 108 outbreaks).

### **Molecular Epidemiology and CaliciNET**

Norovirus PCR positive outbreaks are further characterized at VRDL using sequence analysis of the polymerase (region B) and capsid (region C). 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 allows for more rapid response for investigation, prevention and control of norovirus outbreaks.

### **Emergence of GII.4 Sydney Variant in 2015-16**

In the winter of 2015, the emergence of GII.17 Kawasaki briefly took place (13 outbreaks) from October 2015 to January 2016; however, in November 2015, we began to detect a GII.4 untypeable, which has now been characterized as a GII.4 Sydney variant, and is temporarily named GII.4 Sydney 2015. This GII.4 Sydney variant accounted for the majority of norovirus outbreaks in California in 2015-16. VRDL and CDC will continue to monitor the activity of this new strain. Healthcare providers should report suspect norovirus outbreaks to their local health officials, who can provide guidance on specimen collection and submission. Local health departments may forward specimens to VRDL for norovirus testing and/or typing.

### **Unexplained Viral Diarrhea (UVD) Project**

VRDL serves as one of three Unexplained Viral Diarrhea (UVD) national reference testing centers for CDC. In this capacity, VRDL tests samples from norovirus PCR negative gastroenteritis outbreaks for rotavirus, sapovirus, astrovirus, and enteric adenovirus using real time PCR. Labs are encouraged to submit norovirus negative gastroenteritis outbreaks to VRDL for further testing. We are also interested in receiving virus positive samples from gastroenteritis outbreaks tested by commercial multiplex assays (Luminex/Nanosphere or BioFire FilmArray) for strain typing. For questions about Unexplained Viral Diarrhea Project (UVD) at VRDL, please contact Chao Pan at CPan@cdph.ca.gov or 510 307-8548.

### **Request to Increase Norovirus Testing**

VRDL is seeking your assistance in increasing the laboratory surveillance of norovirus. VRDL can perform norovirus PCR testing if your laboratory lacks the resources. Please work with your epidemiologists and health officers to promote laboratory investigation.

### **Interest in a *Possible* State-wide Norovirus Meeting in 2017**

CDC and APHL are working to sponsor a one-day meeting/workshop for the county lab directors, scientists and epidemiologists to enhance norovirus surveillance and testing in California. Location is yet to be determined, but travel expenses are likely to be provided. Please let us know your interest in attending this meeting. Please feel free to send your comments/feedback to Chao Pan at CPan@cdph.ca.gov.