

Date: November 27, 2013

To: Emergency Physicians, Infectious Diseases Physicians, Intensive Care Physicians, Medical Officers of Health, Pediatricians, Laboratory Directors and Managers

From: Provincial Laboratory for Public Health (ProvLab)

Re: Implementation of Enhanced Detection of Gastroenteritis Viruses by Molecular Assays

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Key Messages:

- Effective September 30, 2013, ProvLab instituted broad testing in selected populations for viruses causing gastroenteritis, using several molecular assays.
- Assays will be used to detect rotaviruses, noroviruses, adenoviruses, sapoviruses and astroviruses.
- This enhanced testing, instead of electron microscopy (EM), is performed on samples from patients with gastroenteritis who are hospitalized or presenting at Emergency Departments, and on samples submitted in the context of an outbreak investigation.

Background:

- **Rotaviruses** are an important cause of gastroenteritis and in many studies have been reported as the most common cause of viral gastroenteritis in children.
- **Noroviruses** are important agents of gastroenteritis; the prototype is the Norwalk virus and an older name for this genus was “Norwalk-like viruses”. Noroviruses are the most common cause of viral gastroenteritis in outbreaks occurring in closed communities. Because diagnosis by electron microscopy is under-sensitive for norovirus detection, their importance in many settings may have been under-estimated. When diagnosis by molecular methods is performed, they are shown to be a common cause of viral gastroenteritis in children, possibly as important as rotaviruses.
- **Adenoviruses** have long been known to be an important cause of gastroenteritis in children; about 55-60% of adenovirus-associated gastroenteritis are caused by the so-called “enteric adenoviruses (Ad40, Ad41)”, the rest being associated with many other adenovirus serotypes including serotypes classically associated with upper respiratory tract infections.
- **Sapoviruses** are virus causing gastroenteritis, whose prototype is the Sapporo virus, and are distantly related to noroviruses; both the genus *Norovirus* and the genus *Sapovirus* are classified within the family “*Caliciviridae*”; in the older literature sapoviruses were called “caliciviruses” and also “Sapporo-like viruses”. Sapoviruses have been reported mostly in children but have been found to be the causal agent in some outbreaks.
- **Astroviruses** constitute a genus within the family *Astroviridae* and are well established agents of gastroenteritis, especially in children.

Note: Noroviruses, sapoviruses and astroviruses cannot reliably be distinguished by EM without superior magnification and resolution; otherwise these viruses are reported as “small round-structured viruses” (SRSVs). This term, which is only a morphological classification, may in fact have been applied in reports of other viruses that can be found in stool samples such as picobirnaviruses, picornaviruses, or even bacteriophages. Compared to our EM, molecular assays will allow for better detection of these viruses.

Inquiries and feedback may be directed to:

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This bulletin has been reviewed and approved by:

Dr. Graham Tipples, Medical / Scientific Director, ProvLab