Description of norovirus analysis (applicable to other enteric viruses as well)

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Cover note: Fill in the cover note that can be downloaded from the internet pages of the University of Helsinki. This cover note or free-form note, containing the same information (the type of the sample, date of the sample taken, which analysis is requested as well ordering and billing information) should be included in the sample delivery.

Assay: Detection of norovirus genome from environmental surfaces

Sample and sending instructions:
Environmental swabs should be taken as soon as possible when norovirus outbreak is suspected. Swabs made of e.g. polyester or cotton wool are moistened with neutral buffer solution (e.g. phosphate buffered saline PBS, pH 7) prior to sampling. An area of 25 to 100 cm² is then swabbed in an up and down motion simultaneously pressing the swab firmly against the surface for 30 s. The swab is then placed in a plastic tube with a maximum of 2 ml of the buffer it was first moistened with. The cap is closed tightly and the tube packed in a plastic bag. The samples are stored and delivered at a cool temperature, preferably at about 4 °C. Samples can be sent via express mail or they can be brought straight to the laboratory. One should always contact the laboratory before sending swabs to ensure a safe arrival of the samples.

Method The analysis comprises three steps. First, viruses are eluted from the swabs and the genome of the virus is released. The second step includes extraction and purification of the viral genome. In the third step viral genome is amplified using reverse transcription-PCR (polymerase chain reaction, separate reactions for genogroup I and II noroviruses). A process control virus is added to each sample to control the performance of the test throughout the processing.

Results The results are given as virus genomes detected (positive)/not detected (negative) in the swab samples analysed. Analyses are usually performed once a week and the results will be informed within 2-5 working days. In rare cases, longer time is required.

Other notes The laboratory uses Good Laboratory Praxis.
The principle of the method: Rönnqvist et al., J Food Protection, 2013 (see reference list).

The laboratory has participated successfully in a ring trial (quality control of shellfish samples) co-ordinated by the EU reference laboratory for viral analyses on shellfish as well as in Nordic and European scientific ring trials (see the reference list). The laboratory participated in the validation of the standard ISO 15216:1, 2017).