

# Increased norovirus activity in Scotland in 2012 is associated with the emergence of a new norovirus GII.4 variant

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**To the editor:** Since late 2012, Scotland has seen a significant increase in norovirus activity and the norovirus season began earlier than usual [1]. The article by van Beek et al. published in last week's issue of *Eurosurveillance* described the emergence of a new variant of norovirus GII.4 (Sydney strain) in a number of countries [2]. To examine whether this was also the case in Scotland, we examined representative samples from norovirus outbreaks in hospitals submitted to the West of Scotland Specialist Virology Centre (WoSSVC) in Glasgow between 8 and 20 November 2012. This time period was chosen as it was after the point when the increased norovirus activity was first reported by Health Protection Scotland [1].

In the time period we examined, there were a total of 13 norovirus positive outbreaks reported by the WoSSVC, 12 were GII-positive and one was GI-positive [3]. We selected a representative sample from 10 of the 12 GII-positive outbreaks for this study (two GII outbreaks were not examined due to low Ct values in real-time PCR). The method used to carry out this analysis targets the ORF 2 gene and has been described previously [4].

The results show that nine of the 10 outbreaks investigated were caused by the Sydney GII.4 strain (Hu/GII.4/Sydney/NSWo514/2012/AU), i.e. shared more than 99.5% homology with that strain in ORF2. The remaining outbreak was attributed to a GII.7 strain. As far as we are aware this is the first time this Sydney variant has been described in Scotland [5].

Most norovirus outbreaks world-wide are caused by variants of noroviruses belonging to the genogroup II genotype 4 lineage (GII.4) [6]. Compared to other noroviruses, those belonging to this lineage undergo an influenza-like antigenic drift (due to a combination of rapid replication, evolution and selection through herd immunity) which results in the selection of new pandemic variants [7]. The emergence of a new norovirus GII.4 pandemic variant occurs every two to three

years and is often associated with an increase in disease activity [6,7]. For example, this has been the case in 2002 (Farmington Hills virus), 2004 (Hunter virus), 2006 (2006a/2006b viruses), 2007 (2006b virus) and 2010 (New Orleans virus). Since 2010, the predominant GII.4 variant in Scotland [5] and world-wide [8] has been the New Orleans strain.

As the emergence of a new GII.4 norovirus variant is often associated with increases in norovirus activity and the data presented here suggest that this may be the reason for the increase in norovirus activity seen in 2012.

There are limitations to our study. Firstly, we only looked at a small number of outbreaks reported to us at the beginning of the norovirus season. It is possible that, if we were to sequence subsequent samples, we may not see this same predominance. We plan to examine previous outbreaks including samples from the end of the 2011/12 season and subsequent outbreaks in 2012/13 in order to determine when this virus emerged in Scotland and whether it remains the predominant strain throughout 2013.

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