

# Nosocomial norovirus outbreak in National Hospital Organization Tokushima Hospital, January 2012

Tatsushi Miyazaki, M.D.

*Infection control team, National Hospital Organization Tokushima Hospital*

Received 29 February 2012; received in received from 8 March 2012; accepted 12 March 2012

---

## Abstract

In January 2012, an acute gastroenteritis outbreak due to norovirus infection occurred in National organization Tokushima Hospital in January 2012. A total of 5 people (3 patients and 2 staffs) suffered. The outbreak lasted 6 days and the clinical symptoms were mild. New admissions were avoided in two wards for 4 days, including a weekend. Activities of rehabilitation were stopped for the same 4 days. There were several management problems that need to be considered. Aggressive infection-control measures were important to terminate the outbreak.

**Key words:** Norovirus, outbreak, gastroenteritis,

---

## Introduction

Noroviruses are a major cause of gastroenteritis outbreaks [1]. Especially in hospitals and nursing homes, norovirus outbreaks have been reported in increasing numbers in the past few years worldwide [2-5]. Noroviruses (formerly called "Small Round Structured Viruses", SRSV or "Norwalk-like Viruses" are the prototype of caliciviruses. They are single-stranded, non-enveloped RNA-viruses [6]. Nosocomial norovirus outbreaks are particularly difficult to control because of their stability in the environment and efficient transmission by person-to-person contact, exposure to contaminated fomites, or inhalation of infectious particles from vomitus aerosols [7]. We report here one outbreak of norovirus in National hospital organization Tokushima hospital on

January 2012.

## Methods

For the epidemiologic investigation, a confirmed case of norovirus gastroenteritis was defined as nausea, vomiting, diarrhea, or stomach cramps with laboratory confirmation of the virus by the rapid test for the detection of norovirus (QUICK navi NORO) in patients who had been hospitalized in National hospital organization Tokushima Hospital between January 2012 to February 2012.

## Results

On January 16<sup>th</sup>, 2012, patient "A" who had been hospitalized in the 7<sup>th</sup> ward began to have diarrhea in the lavatory of the rehabilitation room. A

**Correspondence to:** Tatsushi Miyazaki, M.D., Tokushima National Hospital, National Hospital Organization, 1354 Shikiji, Kamojima, Yoshinogawa, Tokushima 776-8585 Japan Phone: +81-883-24-2161 Fax : +81-883-24-8661  
E-mail: [dr.snoopy@mac.com](mailto:dr.snoopy@mac.com)

physiotherapist cleared the stool away in the lavatory. The next day, on January 17<sup>th</sup>, patient "A" was diagnosed as having norovirus gastroenteritis from the result of the rapid test for the detection of norovirus (QUICK navi NORO). His family members had all suffered the same symptoms a few weeks before. On January 18<sup>th</sup>, another patient "B" in a different room from patient A on the same 7<sup>th</sup> ward began having fever and diarrhea. Patient "B" was placed in a single room. He was diagnosed as having Norovirus from the same rapid test. On January 19<sup>th</sup>, the physiotherapist "C" who cleared away patient A's stool began having diarrhea. On January 20<sup>th</sup>, another patient D who had been hospitalized in 6<sup>th</sup> ward began having slight diarrhea and nausea and the rapid test was positive. Furthermore, a nurse "E" who removed the stool of patient "A" began having a slight fever and nausea and the rapid test was positive. On the same day, we held an emergency norovirus outbreak control meeting and declared a norovirus outbreak. At this meeting, we implemented outbreak control measures: closing the 6<sup>th</sup> and 7<sup>th</sup> wards, halting admissions, and stopping rehabilitation. On January 21<sup>th</sup> (Saturday), no new cases had occurred and the number of patients started decreasing. After this weekend, on January 23<sup>th</sup> (Monday), there were no new cases and confirmed cases had been asymptomatic for 48 hours. We decided to reopen the wards from January 24<sup>th</sup>. This outbreak lasted 6 days from the recognition to the end, and 5 people (3 patients and 2 staffs) suffered (Figure 1). All cases were clinically mild.

## Discussion

Following this norovirus outbreak in our hospital, we found several problems and lessons need to be considered, as below. These lessons need to be shared across organizations in order to improve future outbreak management.

### (1) Proper role sharing when organizing information on infection.

We did not have proper role sharing when organizing information on the

infection.

### (2) Transmitting all information to all employees.

All information could not be quickly transmitted to all employees.

### (3) Revising Tokushima Hospital's manuals for the management of norovirus outbreaks.

Our hospital had not produced manuals for the management of norovirus outbreaks.

Information in our hospital's manual on dealing with the linen of infected patients was not suitable for the actual situation in the working place. Furthermore, the rules of employment for staff showing symptoms of norovirus gastroenteritis needed to be changed. Regarding exclusion of symptomatic staff, much of the evidence supporting exclusion comes from studies of food handlers [8]. The working party recommends the exclusion of staff until they have been symptom-free for 48 hours. We revised our manuals based on this recommendation.

### (4) The rapid test for the detection of norovirus (QUICK navi NORO)

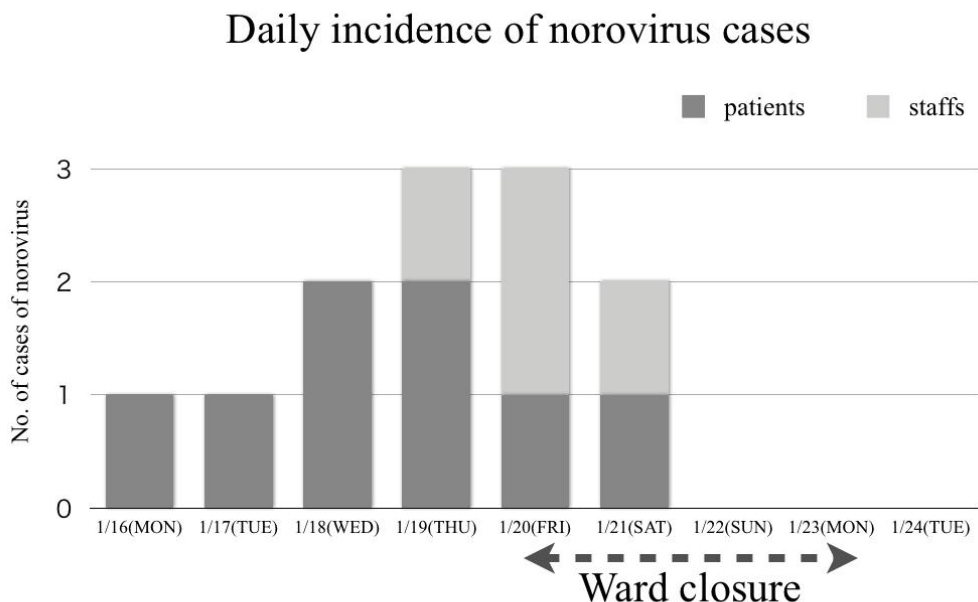
In this outbreak, the rapid test for the detection of norovirus had been carried out several times on the same patient. The sensitivity and specificity compared to RT-PCR results were 81.6% and 96.9%, respectively [9]. In the case of positive results, the diagnosis was confirmed. In the case of negative results, norovirus infection could not be denied. Once a patient is confirmed as having the norovirus infection by the rapid test, the patient should not be tested again just to make sure "the negative result". We should inform all doctors and staff that testing on the same patient many times only to make sure the negative result is nonsense.

In this nosocomial norovirus outbreak in our hospital, a total of 5 people (3 patients and 2 staffs) suffered. Their symptoms were all clinically mild and there were no deaths. To some extent, we could effectively control the spread of infection.

The periods of ward closure included the weekend. This was part of the reason the total number of norovirus cases was small compared to other reports. Prompt implementation of infection-control policies in hospitals when norovirus is first identified in the community could potentially prevent nosocomial outbreaks.

## Reference

1. Said MA, Perl TM, Sears CL. Healthcare epidemiology: gastrointestinal flu: norovirus in health care and long-term care facilities. *Clin Infect Dis*. 2008;47(9):1202-8.
2. Simon A, Schildgen O, Maria Eis-Hubinger A, Hasan C, Bode U, Buderus S, et al. Norovirus outbreak in a pediatric oncology unit. *Scand J Gastroenterol*. 2006;41(6):693-9.
3. Grima A, Gatt A, Zahra G, Gambin A. Outbreak of norovirus infection in a nursing home for the elderly in Malta, November- December 2008. *Euro Surveill* 2009; 14(4):4-6.
4. Centers for Disease Control and Prevention (CDC). Norovirus outbreak in an elementary school--District of Columbia, February 2007. *MMWR Morb Mortal Wkly Rep*. 2008;56(51-52):1340-3.
5. Wikswo ME, Cortes J, Hall AJ, Vaughan G, Howard C, Gregoricus N, et al. Disease transmission and passenger behaviors during a high morbidity norovirus outbreak on a cruise ship, January 2009. *Clin Infect Dis*. 2011;52(9):1116-22.
6. Musher DM, Musher BL. Contagious acute gastrointestinal infections. *N Engl J Med*. 2004;351:2417-27.
7. Barker J, Vipond IB, Bloomfield SF. Effects of cleaning and disinfection in reducing the spread of Norovirus contamination via environmental surfaces. *J Hosp Infect* 2004; 58:42-9.
8. Centers for Disease Control and prevention. Multisite outbreak of Norovirus associated with a franchise restaurant- Kent County, Michigan, May 2005. *MMWR Morb Mortal Wkly Rep*. 2006 Apr 14; 55(14): 395-7



**Figure 1.** Daily incidence of patients in the outbreak at Tokushima hospital January 2012.