

Norovirus Outbreaks in Touristic Resorts: Are Hoteliers Responsible Or are They Victims?

*Antonio Doménech-Sánchez**

¹ Saniconsult Ibérica SL, Palma de Mallorca, Spain

² Área de Microbiología and Instituto Universitario de Investigación en Ciencias de la Salud (IUNICS), Universidad de las Islas Baleares. Palma de Mallorca, Spain

***Corresponding author:** Dr. Antonio Doménech-Sánchez, Saniconsult Ibérica SL, Can Foradí 37, bajos. Son Cladera Nou. E 07009 Palma de Mallorca. Phone: +34971-706456; Fax: +34971706405; E-mail: antonio.domenech@saniconsult.net

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Abstract

Gastroenteritis outbreaks caused by norovirus are one of the main health-related problems affecting the tourist industry. Outbreaks are due to their highly efficient transmission among people in semi-closed populations, particularly in hotels. Most of the measures included in the Hazard Analysis and Critical Control Point systems (HACCPs) are ineffective against norovirus, and specific measures must be implemented when an outbreak occurs. However, different outcomes are obtained acting in a similar manner, as known measures to date are not always effective. Role and responsibility of the hoteliers in outbreak managing is discussed.

Keywords: Control; Gastroenteritis; Hotel; Norovirus; Outbreak; Responsibility; Virus

Commentary

Gastroenteritis outbreaks are one of the main health-related problems the tourist industry faces. Most of the time these outbreaks have been related to food poisoning caused by pathogenic bacteria, as *Salmonella*, *Campylobacter* or *Escherichia coli* O157:H [1]. On the contrary, viral gastroenteritis, in particular those caused by norovirus, has been underestimated until the end of the last century [2]. Our knowledge on bacterial pathogens and preventive measures implementation has increased in the last decades. In the meantime, surveillance networks and methodologies for norovirus detection have been developed. Altogether, the number of described cases of gastroenteritis associated to norovirus has importantly increased in the last years [2], and nowadays is considered the first cause of gastroenteritis [3].

Noroviruses (previously named “Norwalk-like viruses”) are a group of viruses which belong to the *Caliciviridae* family. Diversity of this family has dramatically increased in the last years, and today they are classified into 5 different genogroups. Different strains emerge as the cause of gastroenteritis outbreaks throughout the time, being the genogroup II the most prevalent in the last years [4,5]. Symptoms mainly include diarrhoea, vomiting, abdominal pain, headache, fever and/or muscular pain. Outbreaks are due to their highly efficient transmission among

people in semi-closed populations like health-care facilities, hotels and cruises [6,7]. During an outbreak, primary cases result from exposure to a faecally contaminated vehicle (e.g., food or drinking water) whereas secondary and tertiary cases among contacts of primary cases result from person-to-person transmission [8]. Airborne and fomite transmission also play a role in the spread during outbreaks [9,10]. Transmission through recreational water [11] and sprinkling water [12] has been described as well.

However, the origin is frequently unknown. In most of the outbreaks Saniconsult has been involved with, the most probable scenario was one ill person introducing the virus in the hotel and then a further dissemination by secondary transmission to other persons through direct contact, aerosols or fomites. Infection may be acquired at the tourist's country of origin, as suspected in [12], where the first case was a Canadian woman when norovirus infection cases dramatically increased in Canada. In other cases, norovirus seems to be acquired from the local community (submitted manuscript).

For obvious reasons, and independently of the origin, hoteliers are the first party interested in controlling the situation when norovirus strikes the hotel. In my experience, once the problem is established, measures recommended by the assessor and/or authorities are rapidly implemented. Nevertheless, recovery of samples and epidemiological information is not always an easy subject. In the best of cases, stool samples are tested for bacterial or parasitic pathogen. Diagnostic tools for norovirus still remain a major problem [2] and testing for norovirus either in stool or environmental samples is not always available. Therefore, sometimes hoteliers are even prepared to invest in improving methods of analysis. In fact, when the standard methodology for norovirus (ISO 15216) was not available, our company was funded to optimize previously described methodology to detect norovirus in environmental samples by one important hotelier chain. Application of this methodology allowed the control of two important outbreaks which occurred in resorts located at the Dominican Republic in 2005 after detecting the transmission route [12].

An important question involved in these (and others) outbreaks is: should hoteliers compensate their guest due to a norovirus outbreak? As a general rule, hoteliers are responsible to assure the safety of their installations. If an accident, intoxication or infection results because of non-fulfilment of this statement, they must assume the consequences. Sometimes it may seem that hoteliers hide some information regarding the characteristics of the outbreak, but it should be taken into account that an excess of information may be counterproductive. Besides that, it is not unusual for some tourists to try to get their holidays for free using this information, and I have personally assisted in fraudulent cases of guests informing the medical staff of false symptoms. In fact, organized groups prepare bulky demands including people present at the hotel during an outbreak but without symptoms. Compensation may reach up to hundreds of millions of USD, so it is understandable that hoteliers are afraid of reveal such information.

As stated above, hoteliers must assure the safety of their installations based in all the information available, because absolute control is impossible. Control must be done through Hazard Analysis and Critical Control Point systems (HACCPs), especially applied to food, drinking and recreational water, and also legionnaire's disease prevention. Nevertheless, most of these measures are ineffective against norovirus [2]. Control of norovirus infections requires important hygiene practices and a specific plan for cleaning and disinfection of the installations. For economical and operative reasons, it is impossible to perform such practices in a routine basis. For these reasons, as soon as the presence of norovirus is suspected in the hotel, specific measures must be implemented. Rapidity in implementing such measures is crucial, as this is

one of the critical points that determine whether the outbreak will be controlled or not. Yet, this doesn't assure the success, as we do not know how to stop norovirus transmission [2,7]. First, there are too many possible routes of infection (food, water, direct person-to-person contact, airborne droplets...); therefore different outcomes are obtained acting in a similar manner [13]. Second, some points may be out of control: a vomiting episode in the restaurant area spreading the infection to an important number of guests and staff [9], a plane becoming a source of repetitive infection for different people attending the same resort [12], etc. For the entire expose, even application of extreme measures, including cleaning and disinfection of toilets after each use and mandatory hand disinfection prior to restaurant entry, may become insufficient to control the outbreak [14].

Responsibility assignation in an outbreak is not a simple topic. From a scientific point of view it may seem an easy issue once the aetiological agent is determined. However, there are too many conflicting interests, including hoteliers, tour operators, travel insurance companies and tourists. Most of time, compensation is the only way to avoid a large demand with very negative economical and, most important, awful image effects. In the worst cases, hotel activity is definitively finished. If corrective and preventive measures are not implemented, it is obvious that responsibility falls on the hotelier. But, what happens if the hotel management does the best to avoid the propagation of the virus? In my opinion, when an hotelier's actions are appropriate and follow the assessor and/or authorities' recommendations, he/she must be relieved of all responsibility, as known measures to date are not always effective [2].

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