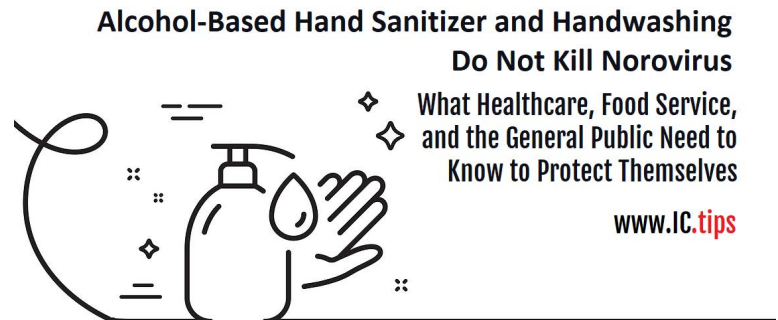


## Alcohol-Based Hand Sanitizer and Handwashing Do Not Kill Norovirus

By: Lisa Veeck

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### ***What Healthcare, Food Service, and the General Public Need to Know to Protect Themselves***

#### **Main Article:**

While the world remains focused on COVID, another bug has been hitting record highs: Norovirus. According to the U.S. Centers for Disease Control and Prevention (CDC), cases and outbreaks of the virus, known for sending children and adults home sick and cruise ships to shore, have been steadily rising (Centers for Disease, 2023). Meanwhile, COVID has conditioned many people, especially in healthcare, to grab alcohol-based hand sanitizer (ABHS) when soap and water are not available. However, despite some ABHS manufacturers suggesting otherwise, the truth is ABHS is ineffective against Norovirus. However, there is an alternative to ABHS that has been found to be effective, stabilized hypochlorous acid (S-HOCI).

Norovirus, also known as the stomach flu, consists of a group of viruses that cause acute gastroenteritis and inflammation of the stomach and intestine linings. Unrelated to influenza (the flu), the highly contagious Norovirus can cause days of nausea, vomiting, diarrhea, and fever. In extreme cases, it can lead to severe dehydration, reduced nutrient absorption, and even death.

## Norovirus Causes An Estimated 650 Million Cases Of Acute Gastroenteritis Annually

According to the CDC, worldwide Norovirus causes an estimated 650 million cases of acute gastroenteritis annually (Centers for Disease, 2021). This includes 200,000 cases in children, resulting in 50,000 deaths. The virus is responsible for at least 50% of all gastroenteritis outbreaks and is estimated to cost \$60 billion in healthcare costs and lost productivity worldwide (Hall, 2011).

In the United States alone, the agency says the virus causes 19 to 21 million cases of vomiting and diarrhea, 109,000 hospitalizations, and 900 deaths annually and is the leading cause of foodborne illnesses (Centers for Disease, 2021). Meanwhile, the U.K Health Security Agency reports that the country's Norovirus cases hit their highest level in over a decade by mid-March and were already 77% higher than in the past five seasons (Norovirus Cases, 2023).

# Norovirus Is Not A Respiratory Illness Primarily Transmitted By Airborne Particles

Unlike the flu and COVID, Norovirus is not a respiratory illness primarily transmitted by airborne particles. Rather, the highly contagious virus is usually spread from direct contact with infected fecal matter, vomit, or an infected person or surface. Also, unlike most respiratory illnesses, Norovirus can live on surfaces, still infecting people for up to four weeks (Norovirus Outbreak, n.d.).

## Forget the Hand Sanitizer: Why Alcohol Doesn't Work

Norovirus is a [nonenveloped virus](#), making it hardier and more resistant to pH and temperature changes and some disinfectants—including alcohol (Virology Research, 2022). In fact, ABHS cannot kill Norovirus because the alcohol, regardless of percentage, cannot penetrate the capsid, the protein shell of a virus particle that surrounds its nucleic acid. In contrast, SARS-CoV-2, the virus that causes COVID-19, is an enveloped virus, which means it has a fragile covering that is easily penetrated by alcohol sanitizers.

The fact that ABHS is ineffective in killing Norovirus is not new news. It is supported by numerous studies and experts, including Dr. Lee-Ann Jaykus (Liu, 2010). Jaykus, a William Neal Reynolds Distinguished Professor in the food, bioprocessing, and nutrition sciences department at North Carolina State University who has been called “the Norovirus woman,” bluntly told *Time*, “Hand sanitizers won't inactivate Norovirus” (Park, 2023).

It is also well documented by the CDC, which published a decade ago declaring ABHS and some disinfectants “useless” against Norovirus (Barton, 2013).

Again, in 2017, Dr. Aron Hall, the CDC's Norovirus expert, told NBC News that ABHS is “ineffective against the virus” but also that “soap and water can wash it away, but that it takes really hot water to kill it” (Fox, 2017). In other words, warm water doesn't kill the virus; handwashing removes Norovirus, but only if it is performed properly and thoroughly, which studies show most healthcare workers do less than 50% of the time. This is why stronger solutions are often mandated in food service, for example, where handwashing dishes may not be sufficient to kill the virus (Centers for Disease, 2020).

Perhaps even more startling is that as early as 2011, some studies showed that ABHS is ineffective against Norovirus and may actually increase the risk of an outbreak of highly contagious diseases—such as Norovirus—in healthcare settings (Vogel, 2011).

Fast forward to today, and the CDC's website states, “Hand sanitizer does not work well against Norovirus... and is not a substitute for washing your hands with warm water and soap” (Centers for Disease, 2022).

If ABHS doesn't work against Norovirus, why hasn't the word spread faster? In short, with the spotlight on COVID, discussions of the inadequacy of ABHS in controlling other infections receded into the shadows. This lack of attention was not lost on some ABHS manufacturers, whose claims were, at best, misleading. For example, on January 17, 2020, the U.S. Food and Drug Administration (FDA) issued a warning letter to GOJO, makers of PURELL, regarding claims on its website that “clearly indicate your suggestion that PURELL® Healthcare Advanced Hand Sanitizers are intended for reducing or preventing disease from the Ebola virus, Norovirus, and influenza.” The FDA warned the company: “You should take prompt action to correct the violations cited in this letter. Failure to promptly correct these violations may result in legal action without further notice” (Czabaniak, 2020).

## What are Healthcare Workers to Do?

It is easy to understand the acclaims ABHS deservedly received for its effectiveness in fighting COVID, especially in healthcare settings where access to soap and water between every patient is often impractical, if not impossible. Further, with every agency from the CDC to the FDA and numerous health organizations touting the need to use ABHS between hand washings, it has become so ingrained in both work and home environments that in healthcare settings, its use is now second nature. With clear evidence showing the ineffectiveness of ABHS against Norovirus (and other nonenveloped viruses), what can healthcare workers do when soap and water are unavailable? There is at least one option.

Hypochlorous acid (HOCl) is approved as a hand sanitizer in the United Kingdom and Europe. Meanwhile, an independent good laboratory practice (GLP)-lab recently tested a antimicrobial hand cleanser made from stabilize HOCL (S-HOCl) (Blue Planet Antimicrobial Hand Cleanser, [www.cleanblueplanet.com](http://www.cleanblueplanet.com)). The GLP lab validated the cleanser's Norovirus efficacy, and it has earned FDA 510(k) Medical Device designation. The S-HOCl formula is hypoallergenic, pH neutral, and has a two-year shelf life compared to the 30-day shelf life of most HOCl. It contains no alcohol, benzalkonium chloride, hydrogen peroxide, or any other chemicals. Also, unlike ABHS, which can cause dermal issues like eczema and dermatitis, the FDA-cleared Blue Planet formula has been shown to soothe irritated skin and promote healing. Blue Planet Antimicrobial Hand Cleanser is accepted by the National Eczema Association, was awarded the Safe Family Seal of Approval from the Child Safety Network, and has a 100% SkinSAFE rating from SkinSAFE, a partnership with the Mayo Clinic.

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