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SAY NO TO NOROVIRUS: WHAT IT IS AND WHY IT MATTERS

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YOUNG REVIEWERS:

ADIRA

AGES: 12–14

ARASI

AGE: 11

Norovirus is one of the most common causes of vomiting and diarrhea in the world and is often referred to as the "winter vomiting bug". Scientists continue to study norovirus, as they aim to develop ways to treat and prevent it. In this article, we will tell you how norovirus infects people and how they feel when they are sick. When norovirus enters the human body, it takes over the cells and uses them to make more copies of itself. This mainly happens in the cells of the digestive system. Norovirus can cause people to have a fever, become tired, vomit, and have diarrhea. If the vomiting and diarrhea are persistent, then dehydration can result. This is often a greater risk in people who are older and living in nursing homes. Scientists have been working to develop new vaccines to protect people against norovirus by reducing the rate of infection.

WHAT IS NOROVIRUS?

Have you ever had a stomachache that was so bad that it made you nauseated, so that you vomited and had diarrhea all day...and then a couple of days later you were back to normal? You might have had a "stomach bug"! Doctors sometimes use the words "stomach bug" when they are talking about a **virus** called norovirus. Norovirus can get into the body through food or water, or through contact with another person who is sick, or by touching the surfaces a sick person has been in contact with. The virus then travels to the **digestive system** and can cause vomiting and diarrhea lasting up to 3 days (Figure 1). Taking care of ourselves, getting lots of sleep, and drinking lots of water can give our bodies the tools they need to fight norovirus infection (Figure 2). Not everyone can fight off norovirus easily, especially in nursing homes and childcare centers where it spreads quickly [1]. There are many types of noroviruses, which makes it difficult for scientists to create a vaccine to protect everyone, like we have for other viruses like measles and mumps.

VIRUSES

Tiny organisms that can infect your body and make more copies of themselves, often making you sick.

DIGESTIVE SYSTEM

Parts of the body including the stomach and intestines that break down food for energy.

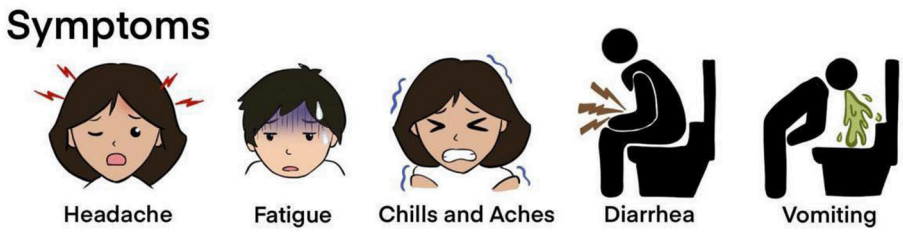

Figure 1

Some of the typical symptoms of a norovirus infection include headache, fatigue, chills and aches, diarrhea, and vomiting.

Figure 2

Methods of treating and preventing norovirus include drinking plenty of fluids, washing your hands well, and washing fresh foods before you eat them.

All over the world, norovirus is the most common germ that causes vomiting and diarrhea, often referred to as **gastroenteritis**, which means inflammation in the stomach and intestines. Even if you do not feel sick, you can spread norovirus to others. Some people have a higher chance of becoming sicker than others. These people have weaker **immune systems**, which means their bodies' natural defenses are not strong enough to fight germs on their own [2]. These groups include children younger than 5, grown-ups older than 65, and patients being treated for diseases such as cancer. Doctors and nurses,

GASTROENTERITIS

Inflammation of the digestive system, which can cause vomiting, diarrhea, fever, chills, and dehydration.

IMMUNE SYSTEM

The body's natural defense system, which includes white blood cells and the substances they produce that help you fight germs.

who spend a lot of time with sick patients, can also spread norovirus or become sick themselves.

WHAT DOES NOROVIRUS DO?

If you become infected with norovirus, you may experience vomiting and diarrhea, as well as a stomachache, a slight fever, and a loss of appetite (Figure 1). Most people have these symptoms for up to 3 days, however, about 50% of those with norovirus do not develop symptoms at all. If symptoms are present, they generally appear a day or two after the person is exposed to norovirus. Doctors do not usually perform specific testing for norovirus because it does not last long in your body, and knowing which virus is there does not change your treatment [3]. In rare cases, you may lose so much water from the illness that you can experience **dehydration**. This is when you have too little water in your body for your cells to function. If vulnerable people, such as children under 5, grown-ups over 65, and sick patients, catch norovirus, their symptoms can last much longer and leave them feeling worse. They might need to go to the hospital to receive extra care. This is why it is especially important to avoid spreading the virus to these groups (Figure 3) [4].

DEHYDRATION

The condition that results when your body does not have enough water. Symptoms include dry mouth, thirst, feeling tired, and headaches.

Figure 3

Extreme dehydration can result from persistent vomiting and diarrhea experienced during a norovirus infection. Children and the elderly are most at risk of dehydration, and it can result in hospitalization.

Figure 3

HOW DO DOCTORS TREAT NOROVIRUS?

CARBOHYDRATES

Substances made up of chains of sugar molecules that provide energy. Foods high in carbohydrates can include grains such as rice, bread and potatoes.

There are no specific medications to treat norovirus, but most people can fight it off anyway! People who are sick with norovirus must make sure to rest and take care of themselves. This includes staying hydrated by drinking lots of water, eating as healthily as possible (which may be limited to high **carbohydrate** foods between episodes of vomiting), and getting enough sleep. While sick, you may feel tired and not want to play with your friends or family. Once you start feeling better, it is important to wait 2 days before you go back to normal activities. It takes time for the virus to leave your body, and you do not

want to spread it to anyone by touching or sharing food and water with them.

When someone has a severe norovirus infection, they may become very dehydrated and a trip to the hospital may be needed. If a patient has developed dehydration and cannot drink fluids normally because they are vomiting, then the medical staff may insert a **cannula**, which is a tiny straw that enters a vein through the skin. This allows fluids to be given to the patient without the person needing to drink. Medicines to help with fever, such as paracetamol/acetaminophen, and anti-vomiting medications can be used to help ease the symptoms. Once the patient starts feeling better, the doctors will monitor them until they have enough energy, water, and nutrients in their bodies to go home.

CANNULA

Small tube that is placed in a blood vessel to give a patient fluids and medications directly into the circulation.

HOW CAN WE PROTECT OURSELVES AND EACH OTHER FROM NOROVIRUS?

There are many simple ways to protect ourselves and each other from norovirus. Personal hygiene has been proven to help stop norovirus from spreading, especially proper handwashing. A scientific experiment showed that hand washing can reduce norovirus' ability to infect people by over 80%. This means eight out of 10 people who washed their hands or used hand sanitizer helped to keep others safe from the virus. By simply washing our hands, especially after using the restroom, we can protect each other from illness. We can also stop the spread of norovirus by washing fruits and vegetables before we eat them, and by keeping our distance from vulnerable friends and family when we feel sick [5].

One of the most effective ways to stop any virus is to make a **vaccine**, which prevents people from getting infected and spreading it. We have vaccines for the flu, chickenpox, and now COVID-19. Scientists are working hard to make a vaccine for norovirus, which may prevent the infection altogether. This job is a challenge because there are so many types of noroviruses [6–8].

VACCINE

A medicine that prepares your body to fight off germs before they make you sick.

THE MAIN LESSONS

Norovirus is the leading cause of gastroenteritis in children and older populations. Norovirus can spread very easily, especially in daycare centers and nursing homes. It is important to maintain good hygiene practices to prevent norovirus from spreading to people who are most at risk of getting sick from it. Scientists still have a lot of work to do to make a vaccine happen, which is why, in the meantime, it is so important to focus on preventing the spread of norovirus at home and at school!

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YOUNG REVIEWERS

ADIRA, AGES: 12–14

Sara (12) I am a Young reviewer studying in an IB School—Mahindra International School, Pune, Maharashtra, India. I am fun loving but diligent, free flowing yet detailed, and open minded enough to be unbiased. I have some pretty cool hobbies including singing Indian classical music, reading, making jigsaw puzzles, creating architecture of Lego blocks, playing tennis, and painting. I love studying, researching, and understanding the basics of any subject being taught. I love all animals and enjoy spending time in nature. I wish peace to the world!

Aditi (14) I am Aditi, a sophomore at Mahindra International School, located in Pune. I have a variety of interests, including sports which can be seen in my involvement within school, being a part of the basketball and volleyball team. In the future, I am leaning toward the career path of the business industry, which aligns with my discernible leadership qualities. I hope to contribute to the betterment of future generations, and lead the path to an overall improved world.

ARASI, AGE: 11

I am Arasi, a sixth grader who loves to sing, dance, and play sports. I also like to just sit down and read a good book! The medical field and sciences fascinate me, and I aspire to become a pediatrician when I grow up.

AUTHORS

ANDREW MARINO

I am a fourth year medical student at the University of Limerick School of Medicine originally from Toronto, ON, Canada, with an interest in pediatric medicine, education, and improving knowledge of the sciences and medicine among youth. I have been involved in the Pediatrics Society at the UL School of Medicine, helping to educate younger generations and inspiring future generations of doctors. Outside of medicine, I enjoy hiking, skiing, playing hockey, tennis, and am a life-long fan of formula one car racing. *drew.marino123@gmail.com

DANICA JEKIC

Hailing from Toronto, ON, Canada, Danica is a fourth year medical student at the University of Limerick School of Medicine. She has been involved in the Pediatrics Society at UL, creating posters, logos, and advertisements for events and educational videos for kids. She wants to one day work in pediatric medicine or surgery and help improve medical accessibility among children and teens. When not studying, Danica loves swimming, kayaking, reading every book she can get her hands on, and drawing characters for stories, old and new.

JAGTAJ MATHAROO

Hey everyone, my name is Jagtaj Matharoo, but everyone calls me Taj. I am a fourth year medical student at the University of Limerick from Brantford, ON, Canada. Before getting into medical school, I worked as a Mad Science stage performer and volunteered with at-risk youth. My interests have always been giving back to the community that helped shape who I am today, and the UL Pediatrics Society helps

make that possible! Outside of school, I enjoy basketball, kayaking, traveling, and spending time with family.

SIOBHÁN NEVILLE

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