

# **Diagnosis and Management of Foodborne Illnesses**

A Primer for Physicians and  
Other Health Care Professionals

## **Norovirus Infection**

### **Patient Scenario**

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This learning scenario can be used to reinforce medical management information pertaining to foodborne illnesses, such as that provided from the previous sections of this primer. This case study provides questions that need to be considered when dealing with a potential case of foodborne illness. Answers are provided immediately following the questions to enhance the learning process.

Similar learning scenarios are also available for other foodborne pathogens.

## Norovirus Infection, a Patient Scenario

Nancy is a 25-year-old previously well graduate student who presents to the emergency department with a 12-hour history of nausea, diarrhea, abdominal cramping, and vomiting (about 6 episodes), malaise, and a low-grade fever. She describes her onset of symptoms as sudden.

Physical examination shows that Nancy is currently afebrile with a supine blood pressure of 123/74 mm Hg. She has a diffusely tender abdomen and is dehydrated. Stool examination is negative for occult blood.

### **What is the possible differential diagnosis for her chief complaint?**

Infectious gastroenteritis

Food intoxication (noninfectious gastroenteritis)

Inflammatory bowel disease

Appendicitis

Pelvic inflammatory disease

### **What additional information would assist with the diagnosis?**

Did anyone in her household experience similar illness within the week prior to onset of symptoms?

Has she been in contact with anyone outside her household with similar symptoms within the previous week?

Has she had such symptoms before?

Does she know if anyone else became ill?

Has she traveled outside the United States within the last month?

Has she previously had a sexually transmitted disease or does she have multiple sex partners?

Nancy reports that she rarely has diarrhea or vomiting. She also reports no contact with anyone who was ill in the past week, nor has she been out of the country in the past month. Her boyfriend, who does not live with her, has similar symptoms with an almost identical onset time. Both attended a wedding 2 days ago. The meal at the wedding reception, which was held at a local reception hall, was the only meal they shared in the past several days. Nancy does not know if anyone else who attended the wedding became ill. Nancy reports that she has no history of a sexually transmitted disease and that she and her boyfriend have a monogamous sexual relationship.

### **How does this information assist with the diagnosis?**

Based on the rapid onset of symptoms, Nancy's reported past history of good health, and the fact that her boyfriend has an almost identical history, inflammatory bowel disease, appendicitis, and pelvic inflammatory disease are the least likely diagnoses.

Food intoxication is also not very likely. Assuming that the wedding reception was the source of the toxin, and this was their most recent common meal, the time from exposure to onset of symptoms is too long. Toxins usually cause illness within minutes to hours after ingestion.

The most likely diagnosis is infectious gastroenteritis. There is a possibility that Nancy's and her boyfriend's illness may be associated with an outbreak of gastroenteritis.

## **What additional information would assist with the identification of the etiologic agent?**

What sorts of foods were served at the wedding reception?

When did the couple last share a meal prior to the wedding reception?

Has an outbreak of gastroenteritis associated with this reception been reported to the local health department?. The health department may be able to aid in determining what the etiologic agent was if it is currently investigating the outbreak.

At the wedding, the couple had a choice of meal. Nancy had lobster tail and filet mignon. Her boyfriend had chicken. They both consumed stuffed mushrooms, salad, and hors d'oeuvres preceding the main meal. For dessert they both had wedding cake and fresh fruit. Both drank wine or beer during the reception.

The couple attended a barbecue the previous week. This outing was a function sponsored by Nancy's employer. Nancy tells you that none of her co-workers have been ill with vomiting and diarrhea.

You place an inquiry with the local health department about the possible outbreak. The health department notifies you that an investigation is currently under way. Illness has also been reported among 75% of attendees at a wedding the day before the one Nancy attended, at the same reception hall. The only common food between the two weddings is the salad, and the health department currently suspects a food handler who worked during both weddings and was experiencing diarrhea. Most patients have reported nausea, vomiting (about 90%), and diarrhea (70%), with some fever, malaise, headache, chills, and abdominal pain. The mean incubation period for those who have reported illness is 28.6 hours, with a mean duration of 31.8 hours.

The health department suspects viral gastroenteritis caused by a norovirus. A norovirus is suspected because of the rapid onset of symptoms, the short 36-hour incubation period and relatively short duration of illness, the absence of bloody diarrhea, and the high percentage of vomiting. Bacterial cultures are negative for enteric pathogens on stool samples collected thus far.

### **What are the complications of norovirus infection?**

Noroviruses are common causes of self-limiting acute gastroenteritis, with illness frequently lasting no longer than 60 hours. They commonly cause outbreaks in such settings as restaurants, catered events, cruise ships, schools, and nursing homes. The viruses can be spread person to person through the fecal-oral route, through contaminated food or water, or by raw or undercooked shellfish.

### **How should norovirus infections be managed?**

There is no antiviral agent that can be used to treat norovirus infections. Supportive care such as oral or intravenous fluids for rehydration should be provided.

To reduce the spread of illness, patients should be educated to use good hand washing practices, particularly after using the bathroom and before preparing and handling food.

The health department requests that a stool sample be collected. The sample should be collected in a sterile container without transport media, and kept at 4°C (40°F) until shipped. The sample should be shipped on ice packs to the local health department laboratory for testing. The health department also asks you to encourage Nancy's boyfriend to submit a stool sample.

### **How could this norovirus infection have been prevented?**

The food handler with diarrhea should not have returned to work for at least 24-48 hours after symptoms subsided.

Proper hand washing procedures can prevent the spread of the virus between persons. Hands should be washed under warm water with soap for approximately 15 seconds to prevent fecal-oral transmission.