

An Extended Stay Getaway: Not Your Average Stomach Bug

by

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Part I – R&R for R&R

“Ladies and gentlemen, welcome to New Orleans. The temperature is 78 °F and the local time is 2:39 PM. Please remain seated as we taxi to our gate. Thank you for flying with us.”

Rebecca was eager to exit her seat right next to a small child who kept wiping his nose with his bare hand. Randy would imitate the child when he wasn't looking to get a giggle out of Rebecca. They were thrilled to have finally made it to their destination. They had been anxious to make it to New Orleans for the wedding of Randy's cousin since January when they received their “save-the-date” invitation. New Orleans had always been a bucket list destination for Rebecca, and Randy hadn't been back home since his brother's college graduation. Now that it was August, it was the perfect time for an end-of-summer getaway.

Randy and Rebecca met while they were both attending school in Wisconsin. Rebecca grew up on a farm in rural Wisconsin. She knew she didn't want to stay in the family business, but family was everything, so she stayed nearby while she worked toward her law degree. Randy grew up near New Orleans, but he had decided to pursue a career in agriculture after a joke about loving cheese revealed to him his real passion. What better place to infiltrate the dairy industry than Wisconsin?

Randy had been noticing Rebecca in the campus wellness center for almost two full semesters before he built up the courage to ask her out; one date, and the rest was history. They got along famously and had many interests in common despite their vastly different upbringings. They were both runners, enjoyed old movies, and loved seafood. Randy's seafood experience was a bit more extensive, coming from the Gulf; he was constantly telling Rebecca how much she would love the local cuisine. He especially raved about the oysters that he and his father would bring home from the street markets when he was a kid.

They couldn't check into their hotel until after 4:00 PM, so as soon as the couple retrieved their baggage from the carousel, they hailed a cab and headed downtown to grab a bite to eat. Of course, Rebecca wanted to try the oysters that Randy had been telling her about for three years. Randy knew that they couldn't go wrong with any New Orleans restaurant, so he exclaimed, “Driver, please take us to your favorite place for oysters!”

As they pulled up, Rebecca could already smell the fishy aroma in the air. It made her smile. Although she had traveled a few places, mostly throughout the Midwest, this experience was brand new for her. They grabbed their luggage out of the trunk of the cab and found an open table on the sidewalk in front of the restaurant. It was perfect; they didn't have to drag their bags through people. Rebecca sat down while Randy went inside to place their order. He came back with a couple of waters and a basket of biscuits and honey butter. The oysters were at their table in about ten minutes, served raw on a beautiful platter filled with ice.

“You weren't kidding!” said Rebecca. “These are the best oysters I've ever had!” Randy was pleased to share Rebecca's first fresh oyster experience with her.

Part II – Off to the Lab

Rebecca was running a fever of 101.4 °F and had begun throwing up. The nurses provided her with some anti-nausea medication and took blood and stool samples for analysis. While waiting for the lab results, the nurses conducted a short interview to investigate what could be causing the discomfort and violent gastrointestinal reaction.

The following remarks were made in her chart.

Patient history: Female. 32 years old. Partner indicated that patient was diagnosed with rheumatoid arthritis four years ago. Patient maintains regular injection schedule. Standing prescription for adalimumab.

Symptoms:

- T 38.6 °C; BP 95/50 mmHg; P 135/min
- Emesis
- Severe fatigue
- Abdominal pain
- No coughing or wheezing

Complete Blood Count (CBC) with Differential:

- Hematocrit: 42.9% (Normal range for women: 34.9 to 44.5%)
- Platelets: 115,000 μL (Normal range for women: 150,000 to 450,000/ μL)
- Leukocyte count: 14,000/ μL (Normal range: 4,500 to 11,000/ μL)
- Differential leukocytes: 75% PMNs, 3% monocytes, 20% lymphocytes, 1% eosinophils, 1% basophils

Microbiology:

- Stool culture: growth on MacConkey (MAC) thiosulfate citric bile salt sucrose (TCBS) agar after 24-hour incubation (Figure 1).
- Blood cultures: detected microbial growth after 36-hour incubation,
- Gram stain: A follow-up Gram stain was prepared on positive blood culture bottle (Figure 2).

Questions

4. Interpret the stool culture.
5. Interpret the Gram stain.
6. Discuss possible diagnoses for Rebecca.
7. What is the most likely source of infection?

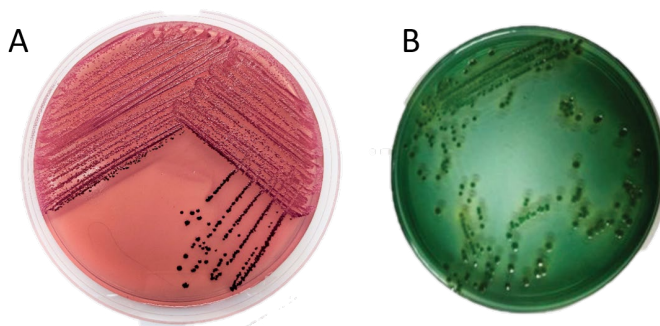


Figure 1. Stool samples cultured on A) MAC agar and B) TCBS agar. [1]

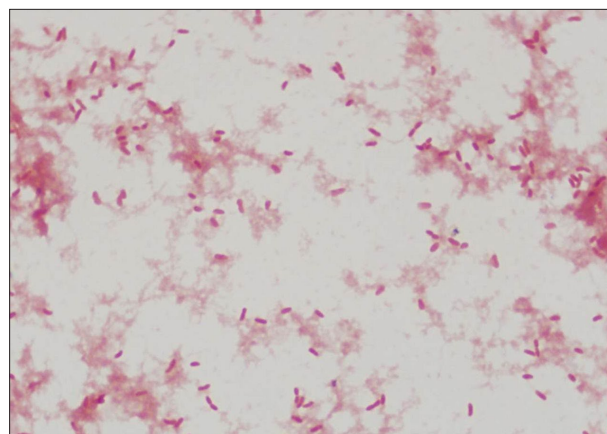


Figure 2. Gram stain of blood culture sample. [2]

Part IV – The Epidemiology

Vibriosis is a nationally notifiable disease, which means it is reported to local health departments and the CDC upon diagnosis. This allows public health workers to monitor the cases and data for any possible patterns or trends.

Epidemiology is the branch of medicine that deals with the incidence, distribution, and possible control of diseases. Consider the following example of an epidemiological (epi) curve which is representative of vibriosis cases that one might expect to see along the Gulf coast near New Orleans (Figure 3).

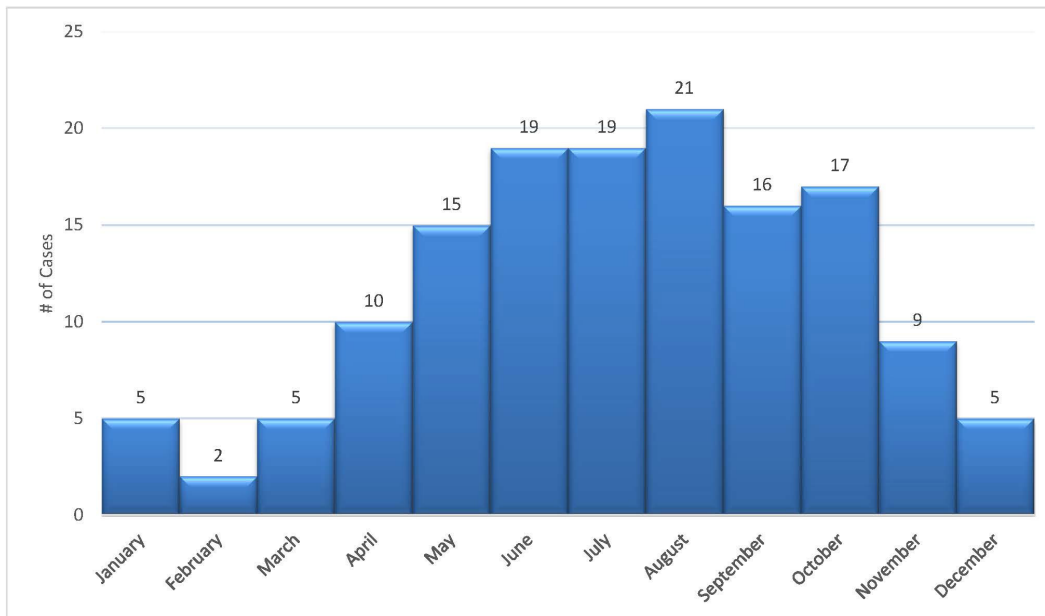


Figure 3. Example epi curve using data adapted from CDC case reports of vibriosis cases in the United States. Each bar represents one month. The y -axis is the raw number of cases. [3]

Questions

10. What trend(s) can be identified in the data?
11. What possible factors could explain the trend(s) identified in the data?

Part V – The Ecological Connection

Today, Rebecca and Randy are happy and healthy. They were married two years after the vibriosis episode and have been crusaders to promote awareness for global climate change ever since.

Question

12. Why would Rebecca's scare with vibriosis push her and Randy to want to advocate for global climate change awareness?

End Notes

- [1] Figure 1(A) by S. Sletten; Figure 1(B), reproduced with the permission of AIP Publishing, from: Al-Dulaimi, M.M.K., *et al.* 2014. Isolation and identification among cockle isolates of *Vibrio vulnificus* isolated from Selangor, Malaysia. *AIP Conference Proceedings* 1614(1), 208. <<https://doi.org/10.1063/1.4895197>>.
- [2] Figure 2, reproduced with permission from BMJ Publishing Group Ltd., from: Hendren, N., *et al.* 2017. *Vibrio vulnificus* septic shock due to a contaminated tattoo. *BMJ Case Reports*. <<https://doi.org/10.1136/bcr-2017-220199>>.
- [3] The actual data used to develop the epi curve in Figure 3 was generated by the authors of this case study using similar outbreaks and is not reflective of actual CDC data for New Orleans, LA. For further information, see “Epi Curve” on the CDC website at <<https://www.cdc.gov/vibrio/investigations/vibriop-09-13/epi.html>>.