Case 3.2

On Christmas Eve, 2000, you were working as a clerk in a Dallas emergency room. At 3 A.M., a man and two women arrived with a screaming 6-year-old girl. The man tried to explain what was wrong but he spoke only Spanish and you had a difficult time understanding him. The girl’s mother was sobbing and you couldn’t hear what she was saying. The other woman spoke a bit of English and explained to you and the nurse on duty that this was her sister’s family, who had just arrived from El Salvador. The aunt did not know what was wrong with her niece but told you that the father was repeating the words for “break bone”. The nurse examined the girl and found that she had a rash and a fever of 104°F. Although the girl seemed to be in severe pain, the nurse found no bone fractures. The father, shaking his head violently, said something urgently to his sister-in-law. She interpreted his frantic statement for you, “He said it is in her blood”.

1. What is your diagnosis?

2. What connection does this disease have to broken bones?

3. This is a vector-borne disease. What is the name of the most common vector?

4. What other infection is transmitted by the same vector?

5. The next night when you arrived at work the little girl seemed to be doing better. The rash had subsided and her fever had lowered. But on the third night you arrived to find that she had been transferred to intensive care after hemorrhaging internally. Is this still consistent with your original diagnosis? Explain.

6. This all sounds very bad, but you’re somewhat comforted by the fact that this disease is not found in the United States. Right?

Answers and Explanations For Case 3.2

1. What is your diagnosis?
Dengue fever, caused by an arbovirus (arthropod-borne virus). This diagnosis seems very likely because of the combination of symptoms and geography. High fever, severe pain, and rash are characteristic of dengue. And the victim comes from El Salvador, where dengue is endemic. El Salvador also experienced an epidemic of dengue in the year 2000.

2. What connection does this disease have to broken bones?
The disease is often called "breakbone fever" because of the severe pain it causes in deep tissues. Bones do not actually break.

3. This is a vector-borne disease. What is the name of the most common vector?
Aedes aegypti, a type of mosquito, is the most common vector for this virus, although other mosquitoes can transmit it as well.

4. What other infection is transmitted by the same vector?
Yellow fever, caused by another arbovirus.

5. The next night when you arrived at work the little girl seemed to be doing better. The rash had subsided and her fever had lowered. But on the third night you arrived to find that she had
been transferred to intensive care after hemorrhaging internally. Is this still consistent with your original diagnosis? Explain.

Most dengue fever cases resolve themselves without serious complications, but in a form of dengue called dengue hemorrhagic fever (DHF), an apparently recovering patient takes a sudden turn for the worse and begins to bleed internally. A significant percentage of these patients die. The hemorrhagic form of dengue was seen quite frequently in El Salvador during 2000.

6. This all sounds very bad, but you’re somewhat comforted by the fact that this disease is not found in the United States. Right?

Right— for now! But the presence of the vector is the most important factor leading to introduction of an arbovirus in a geographical area. Aedes aegypti exists in some southern U.S. states. And Aedes albopictus mosquitoes (which are highly capable of carrying this virus) are in over half of the states in the United States. Surveillance is ongoing to monitor the incidence of dengue fever (and yellow fever) in the United States,