

## **Outbreak in Rwandan Refugee Camp**

In the spring of 1994, civil war broke out in Rwanda. In a three-month period, 500,000 people were killed and 3.9 million were displaced as they fled the areas of fighting. In one week in July, approximately 1,000,000 fled to Goma, Zaire. In the days that followed, the town was completely denuded of trees as refugees used them to build fires for warmth and cooking. The refugee camp surrounded a lake, the only source of water in the area. The land in the region consists of a thin layer of topsoil over hard volcanic rock. Most of the refugees were undernourished. The following is information taken from newspaper accounts of the disaster that beset the refugees.

19 July 94: CARE estimates that to provide adequate food to feed the people for the next month, 100 trucks carrying 40-tons each of rice, beans and cooking oil must arrive every hour for 24 hours. The terrain and fighting makes this nearly impossible. Most refugees have no shelter. The camp is dotted with makeshift tents made of plastic sheeting and blankets for those lucky enough to have carried or found them as they fled the fighting. The chief concern of Joelle Tanguy, head of Doctors Without Borders USA, is not food and shelter but infectious disease. Today he confirmed one case of an infectious disease in the refugee camp. The patient had profuse watery diarrhea that was milky colored. He was extremely dehydrated and still losing fluid from the diarrhea.

20 July 94: Dr. Tanguy reports the first death from the disease. An additional 120 cases are confirmed for the diarrheal disease.

21 July 94: Officially, 250 people have died from the epidemic, however, several doctors report counting 800 dead on the side of a five mile stretch of the road leading to Goma. After 5 miles, they decided to stop counting

25 July 94: One week after the first confirmed case, official counts are 14,000 people dead and 90,000 infected. Bulldozers are used to dig through the rock to make mass graves. At the gravesites, traffic jams build up as trucks wait to unload the dead corpses. Trucks, which can only carry 40 bodies, are running 24 hours a day. In the camp, refugees wear handkerchiefs, scarves and surgical masks in the streets to try to cope with the stench of rotting bodies and stinging fumes from fires. The refugee count now is

estimated at 2.4 million. The nearest airport to Goma is too small to land large aircraft. The nearest airport that can handle large aircraft has been damaged by war in Rwanda and roads joining this airport to Goma are blocked by continued fighting.

26 July 94: Officially, the death toll now stands at 18,000, however, privately, UN Officials estimate the death count at 50,000 with 1,800 dying each day. Bodies now lay side by side for 100 yards along the road to Goma. They are piled two and three high in rows three and four deep. United Nations Undersecretary, General Peter Hansen, says, "We are facing nothing short of a catastrophe" Andrew Middleton, an aid worker is blunter: "It's a...nightmare."

President Clinton ordered the US Military to participate in humanitarian relief for the area. If you were to advise the president, how would you answer the following questions:

- 1) What disease is killing so many of the refugees and what is the pathogen that causes it?
- 2) Describe how the pathogen causes the lethal diarrhea and an appropriate treatment.
- 3) After an airport and road for transportation into the area are secured, what should be the military's first priority in order to minimize deaths due to this illness? Explain why.
- 4) The second priority? Explain why.