

INTERNATIONAL

OUTRAGE

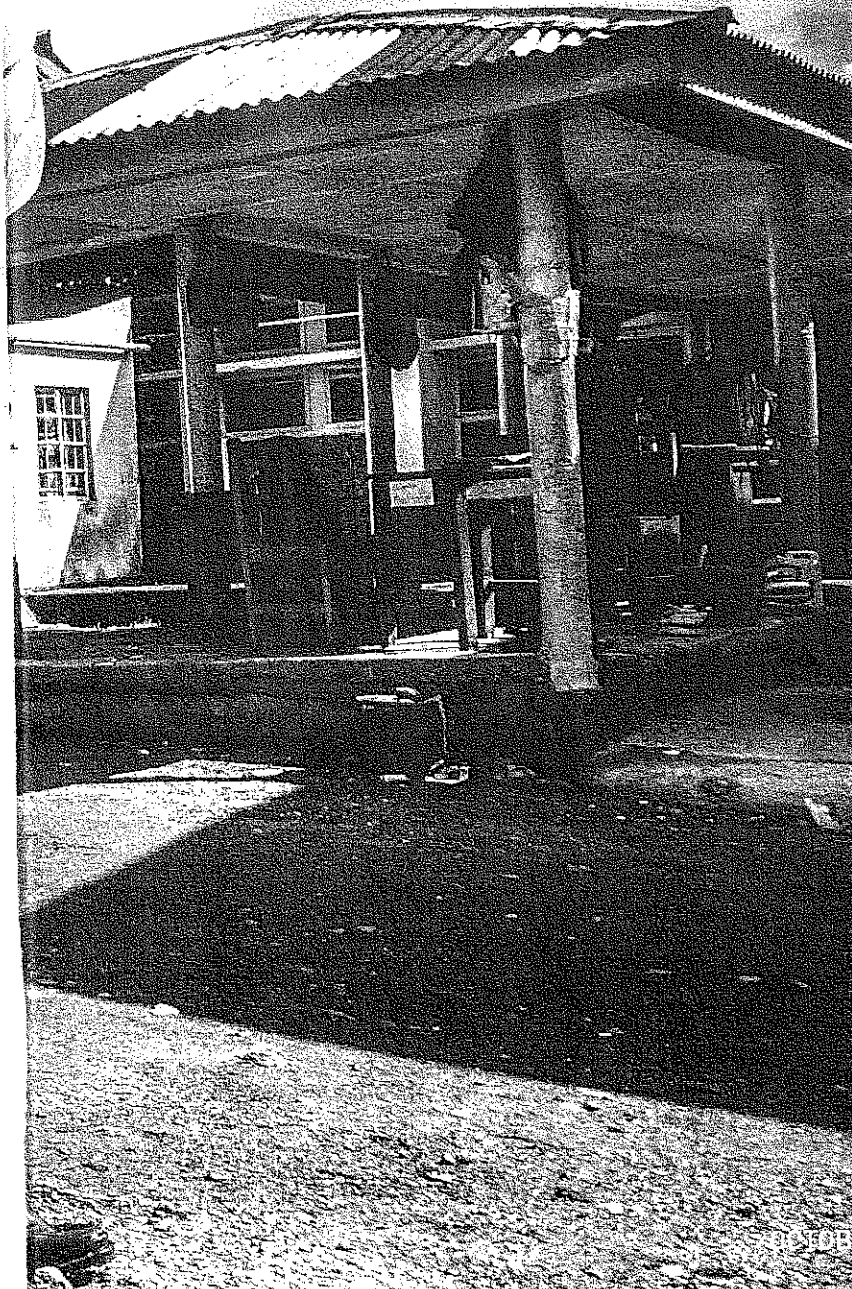
A horrifying disease called Ebola is ravaging West Africa



Hospital workers wearing hazmat gear as protection against infection carry the body of an Ebola victim to a morgue in Sierra Leone.

FEAR!

How worried should we be?



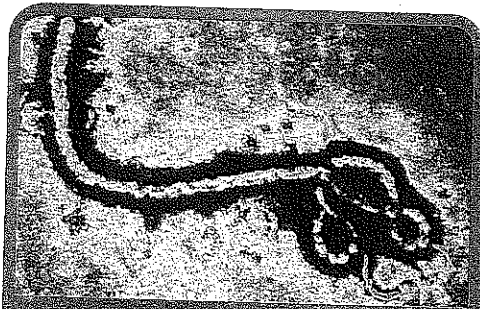
It starts like many other illnesses: with a fever. You feel weak and your joints and muscles hurt. Your throat gets so sore, it's hard to swallow. Your head aches. It feels like the flu, but the symptoms strike suddenly and are more severe. Then things go from bad to worse.

You find yourself doubled over with stomach pains, vomiting, and diarrhea. Your chest hurts and you're gasping for breath. Inside your body, you've begun to bleed as the **virus** attacks your internal organs. What you can see on the outside is one of the disease's most horrifying effects: The skin erupts in bruises and large, bloody blisters. Some people bleed from the nose and the eyes. For 60 percent to 90 percent of victims—depending on which species of the virus has infected them—the next steps are severely low blood pressure, multiple-organ failure, and finally death.

This may seem like science fiction, but the disease is real. Its name is Ebola (*ee-BOH-luh*), and although it has appeared only in Africa so far, it has been spreading dread around the world.

continued on p. 12

TOP: WIKIMEDIA COMMONS; BOTTOM: THE NEW YORK TIMES/REUTERS/HEALTHWORKERS



Above: The Ebola virus, magnified
Right: A fruit bat being tested for the virus



Ebola has been in the news because of an outbreak that started last December in the West African nation of Guinea (see map, pp. 14-15). It then spread to nearby Liberia, Sierra Leone, and Nigeria.

By early September, there had been at least 4,200 confirmed or probable Ebola cases in the region, with more than 2,000 deaths. The World Health Organization (WHO) has declared this Ebola outbreak—the deadliest on record—an international public-health emergency.

The WHO announcement led to alarming headlines, rumors, and panic. Some African nations closed their borders with the affected countries. Airlines canceled flights to and from West Africa while authorities checked outgoing passengers for fever, a sign of Ebola infection. In the U.S., the Centers for Disease Control and Prevention (CDC) put monitors at 20 airports and border crossings.

Fortunately, there is good news that often gets lost in the headlines: Under most circumstances, experts

say, Ebola is not easy to catch. In the U.S., we're far more likely to die of cancer or heart disease, which each kill more than half a million Americans a year.

What is important to know about Ebola? To find out, *JS* talked with Arthur Reingold, a professor of epidemiology at the University of California, Berkeley, School of Public Health. He helped us separate the facts about Ebola from the fiction.

Where does Ebola come from?

Scientists call the illness Ebola virus disease (EVD). It was named for the Ebola River in the Democratic Republic of the Congo, where the first known outbreak of Ebola took place in 1976. It killed 280 of the 318 people stricken.

Smaller outbreaks occurred in Congo and Sudan that year and again in 1977 and 1979. Then Ebola seemed to disappear for a while. The next outbreak didn't occur until 1994.

As Reingold tells *JS*, "The disease occurs only irregularly,

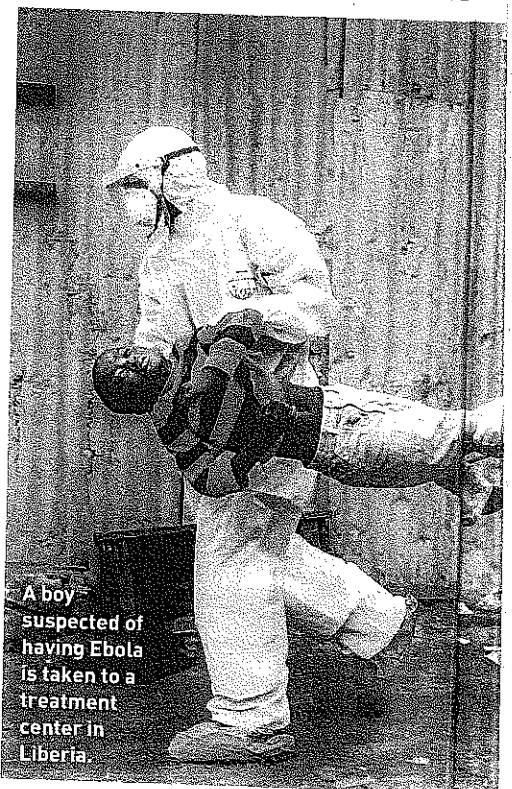
when the virus manages to get into people from wherever it normally lives in nature."

What causes it to occur? "We don't know how any Ebola outbreak begins," says Reingold, "because we don't know exactly where the virus [comes from]."

Scientists think that fruit bats may be the Ebola virus's natural host. Chimpanzees, gorillas, and other rainforest animals can come down with Ebola when they eat fruit contaminated by the saliva or other bodily fluids of fruit bats.

How is Ebola spread to humans?

Unlike the flu virus, Ebola can't be caught by casual contact—by touching an infected person or breathing in the virus after someone coughs. It probably first spread to humans when they came into contact with the



A boy suspected of having Ebola is taken to a treatment center in Liberia.

SCOTT GAZDAR/SCIENCE SOURCE (EBOLA VIRUS); LYNN JOHNSON/NATIONAL GEOGRAPHIC/GETTY IMAGES (BAT); DANIEL BERREJOL/GETTY IMAGES (MEDICAL WORKER); PAUL THOMPSON/REUTERS (WOMAN)

Words to Know

- **virus** (*n*): an extremely small living thing that causes a disease and that spreads from one person or animal to another
- **epidemiology** (*EH-puh-dee-mee-AH-luh-jee*) (*n*): the study of the causes, spread, and control of diseases in a community
- **pandemic** (*n*): an outbreak of a disease that spreads quickly and affects a large number of people globally or over a wide area

blood of an infected animal. Some West Africans eat bush meat—the flesh of wild mammals, such as monkeys, deer, and fruit bats. Handling the raw meat is dangerous if the animal carries the virus. But other than a few cases of animal-to-human infection, most human Ebola infections are now being spread from person to person.

Ebola spreads between humans, says Reingold, “when the virus in the blood [or other bodily fluid] of a patient manages to get into a new person—through a break in the skin, the eyes, or what we call mucus membranes, such as your mouth” or nose. The virus must get into a person’s bloodstream in order to infect him or her.

After a person is exposed to the virus, it can take up to three weeks for symptoms to appear. The infected person isn’t contagious until they do. Only then are bodily



fluids a danger to other people.

Normally, this happens deep in the jungle, Reingold says. “That person may then just get sick and die, and no one would ever know about it. But if [sick people] get health care or if the family member taking care of them becomes sick, you can have a cluster of individuals” who can spread the virus—including health workers.

“In the past when that happened, a few dozen experts [could go] in with the right equipment and know-how and contain the outbreak.”

The 2014 West African outbreak, however, has already spread over a wider area than in the past. “It’s now in multiple countries and in some big cities, so the process of containing it is much, much, much more difficult,” Reingold adds. “We know how to do it. [But it’s] difficult to implement, because these are very poor countries with very poor health facilities, [and] very limited health providers and equipment. And, of course, this disease generates an enormous amount of fear.”

This fear, plus a mistrust of foreign doctors, has contributed to the virus spreading over a wider area.

Authorities are taking drastic measures to try to contain the outbreak. In Monrovia, the capital of Liberia, officials tried to quarantine (keep in enforced isolation) a slum area where the infection had spread. Anger among people forced to stay in that area erupted into violence. Protesters threw rocks at riot police and police fired into the crowd, killing a teenager. After 10 days, the government lifted that quarantine, but there have been others.

continued on p. 14

KILLER DISEASES

The Big Three



As scary as Ebola may seem, its death toll and global reach don’t come anywhere close to historic levels. These diseases are responsible for the worst **pandemics** to strike humankind.

1 The Black Death 1347-1351

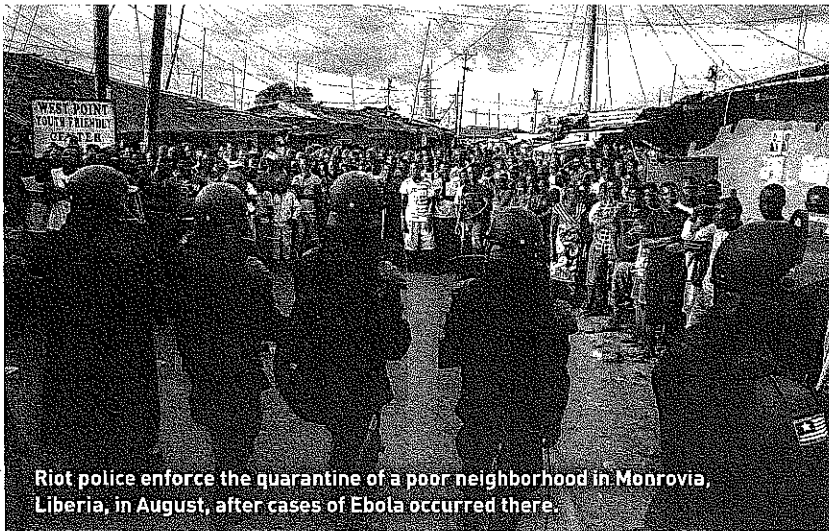
The bubonic plague killed between 75 million and 200 million people in Europe and Asia at a time when the total world population was only about 450 million. It probably moved from rats to humans by way of flea bites, but then spread rapidly from person to person.

2 The Spanish Flu 1918-1919

This airborne flu virus, easily spread by coughs and sneezes, struck every continent but Antarctica. It killed an estimated 50 million people, more than half a million of them in the U.S.

3 HIV/AIDS 1981-present

AIDS is caused by HIV, a virus that makes the body’s immune system defenseless against other types of infection. It has killed more than 36 million people—including 636,000 Americans—since it was first identified in 1981.



Riot police enforce the quarantine of a poor neighborhood in Monrovia, Liberia, in August, after cases of Ebola occurred there.

How do doctors treat Ebola victims?

"The most important thing," says Reingold, "is that the patient be isolated." Isolation prevents the virus from spreading to anyone else. It's crucial that people in contact with a patient—be they family members or medical professionals—wear hazmat suits or other protective gear. Anything that may have touched highly infectious bodily fluids must be decontaminated.

Scientists have been studying the Ebola virus since the first 1976 outbreak. So far, however, there is no cure. Some companies are developing experimental drugs but, says Reingold, "currently they're available in incredibly limited supply."

Experts don't fully understand why, but some people do survive. In August, an American doctor and an aid worker who contracted the virus in Liberia were evacuated to Emory University Hospital in Atlanta, Georgia. After experimental treatments, both recovered.

How worried should we be?

"People should not be fearful or concerned about the possibility" of

contracting Ebola, says Reingold. "We know how to prevent transmission of this virus from one person to another. The only ones at risk are those taking care of sick people. A widespread transmission and an outbreak here or in Europe or in other wealthy countries is extraordinarily unlikely."

Recent news stories have warned that Ebola could spread through the importing of infected bush meat. Although it's illegal, some immigrants from West Africa have smuggled the meat into the U.S.

While eating contaminated meat may be dangerous in theory, Reingold doesn't believe it's a threat to Americans in general. "[People] really don't need to worry or even think about Ebola if they're not going to these particular countries [where it's occurring]."

For most of us, the best way to stay safe from any infectious virus, minor or major, is simple.

"Good hand washing, good sanitation—those are important," Reingold says. "[So is] being vaccinated against the diseases for which we have good vaccines."

—Kathy Wilmore,
with reporting by Carlin McCarthy

MAPSEARCH

Ebola in Africa

Questions

1. The current Ebola outbreak is centered in which region of Africa?
2. In which country did it originate?
3. Where did the first known Ebola outbreak take place, and in what year?
4. In which direction would you travel from the site of the first known Ebola outbreak to the origin of this year's outbreak?
5. Four of the five countries with outbreaks from 2000 to 2009 lie along which line of latitude?
6. Ebola has spread through almost all of which West African country?
7. The southernmost Ebola outbreak occurred during which time span?
8. Which country has had the most outbreaks?
9. In which time span were there no known outbreaks?
10. Which two countries' borders were completely closed to their neighbors after this year's outbreak?

YOUR TURN

What's the most important thing people should know about Ebola?
How would you explain the disease to someone who is afraid of it?

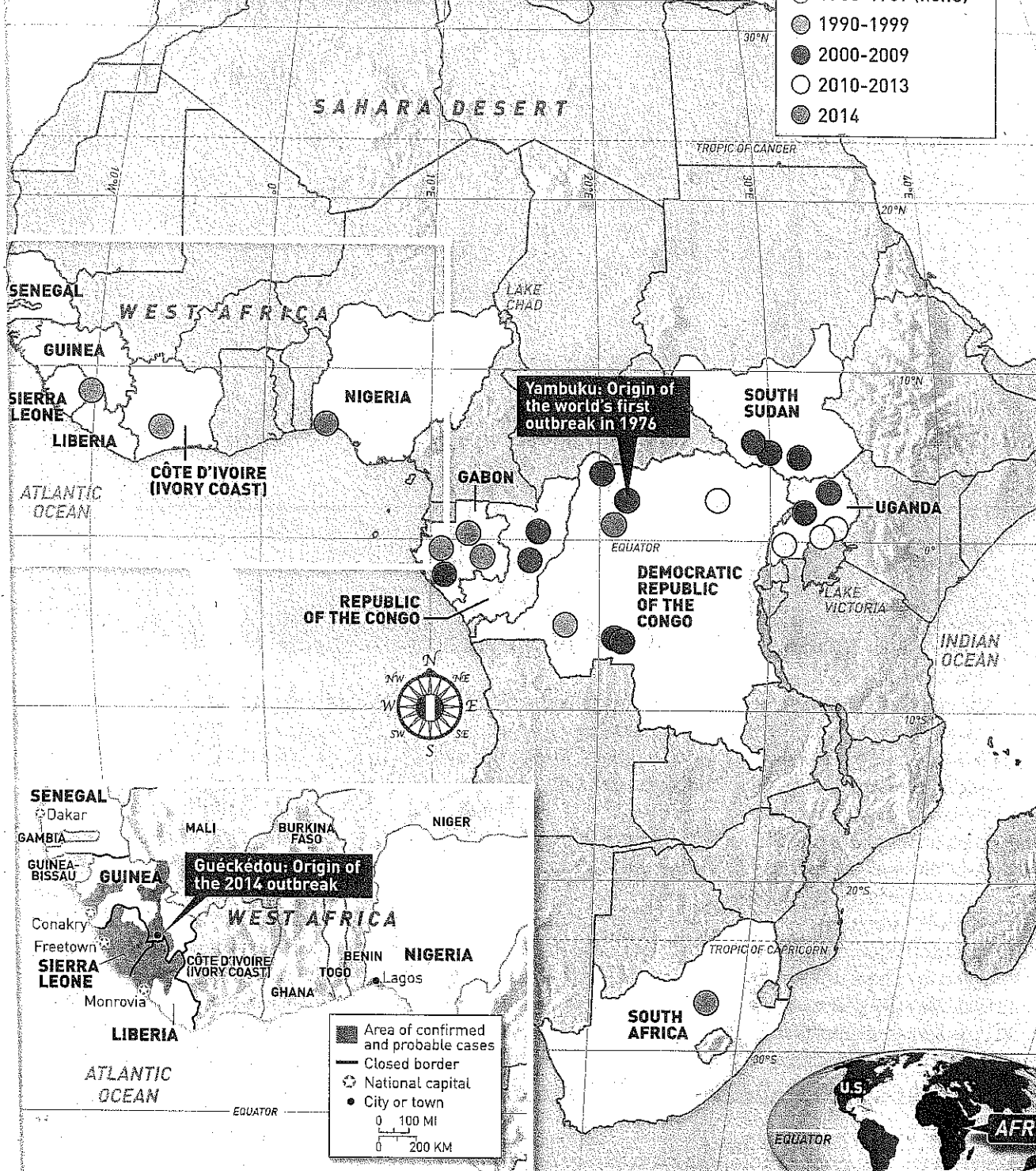
JOHN MOORE/GETTY IMAGES (RIOT POLICE); JIM MCMAHON/MAPMAN™ (MAP)

ca 1976-2014

This map shows the location of Ebola outbreaks in Africa since 1976. The inset focuses on West Africa, the region where a current outbreak—the deadliest ever—is centered.

OUTBREAKS BY YEAR

- 1976-1979
- 1980-1989 (none)
- 1990-1999
- 2000-2009
- 2010-2013
- 2014



SOURCES: Centers for Disease Control and Prevention; World Health Organization (as of 9/9/14)

