Crisis in the Red Zone: The Story of the Deadliest Ebola Outbreak in History, and of the Outbreaks to Come

NEW YORK TIMES BESTSELLER The 2013-2014 Ebola epidemic was the deadliest ever-but the outbreaks continue. Now comes a gripping account of the doctors and scientists fighting to protect us, an urgent wake-up call about the future of emerging viruses-from the #1 bestselling author of The Hot Zone, now a National Geographic original miniseries.

This time, Ebola started with a two-year-old child who likely had contact with a wild creature and whose entire family quickly fell ill and died. The ensuing global drama activated health professionals in North America, Europe, and Africa in a desperate race against time to contain the viral wildfire. By the end-as the virus mutated into its deadliest form, and spread farther and faster than ever before-30,000 people would be infected, and the dead would be spread across eight countries on three continents.

In this taut and suspenseful medical drama, Richard Preston deeply chronicles the outbreak, in which we saw for the first time the specter of Ebola jumping continents, crossing the Atlantic, and infecting people in America. Rich in characters and conflict-physical, emotional, and ethical-Crisis in the Red Zone is an immersion in one of the great public health calamities of our time.

Preston writes of doctors and nurses in the field putting their own lives on the line, of government bureaucrats and NGO administrators moving, often fitfully, to try to contain the outbreak, and of pharmaceutical companies racing to develop drugs to combat the virus. He also explores the charged ethical dilemma over who should and did receive the rare doses of an experimental treatment when they became available at the peak of the disaster.

Crisis in the Red Zone makes clear that the outbreak of 2013-2014 is a harbinger of further, more severe outbreaks, and of emerging viruses heretofore unimagined-in any country, on any continent. In our ever more interconnected world, with roads and towns cut deep into the jungles of equatorial Africa, viruses both familiar and undiscovered are being unleashed into more densely populated areas than ever before.

The more we discover about the virosphere, the more we realize its deadly potential. Crisis in the Red Zone is an exquisitely timely book, a stark warning of viral outbreaks to come. Richard Preston is the #1 New York Times bestselling author of ten books, including The Hot Zone, The Wild Trees, and The Demon in the Freezer. Preston has taught nonfiction writing at Princeton University and the University of Iowa, and he is the recipient of many prizes and honors, including the Champion of Prevention Award of the U.S. Centers for Disease Control. His books have been published in more than thirty languages.PART ONE

Nameless

Sacrament

Yambuku Catholic Mission, Zaire (Now Democratic Republic of the Congo)

September 9, 1976

The rains had begun. The nights were clamorous with downpours, and malaria troubled the villages. On the ninth of September, 1976, a woman named Sembo Ndobe arrived at the maternity ward of the hospital at the Yambuku Catholic Mission, a remote outpost in Zaire, situated some fifty miles north of the Congo River in a district of quateur province called Bumba Zone. Ms. Ndobe had a high fever, and she was in labor.

The Yambuku Mission Hospital was a collection of one-story pavilions joined by covered walkways, sitting amid African oil palms and tropical vegetation. The buildings were made of brown bricks, and had open porticoes running along their sides. The maternity ward was a modest pavilion with a room that contained nineteen beds. A metal birthing table, dented and worn, stood at one end of the ward near a chalkboard where the staff wrote announcements of births. Three Congolese midwives worked in the ward, along with a Belgian nun named Sister Beata.

Sister Beata was a middle-aged woman with smooth, dark hair, which she wore pulled back tightly under a white head covering, and she had an earthy, warm manner. Her given name was Jeanne Vertommen, and she came from Flanders. In addition to her head covering, Sister Beata typically wore a short-sleeved white blouse and a white skirt. Sometimes, though, either for fun or for practicality, she would wear a long African skirt printed with a bold design. When she worked in the maternity ward, she covered her habit with a cotton surgical gown. She did not wear rubber gloves. Possibly she may have liked the sensation of close contact with babies and their mothers.

Now, she examined Ms. Ndobe. The woman was experiencing agony in her midsection. There was a strange look on Ms. Ndobe's face, a blank, vacant, dazed expression, as if she wasn't all there. She could answer questions, but she didn't seem to be fully aware of her surroundings. The whites of her eyes were inflamed and bright red, and the whites glistened with a film of blood covering the surface of the eyeball. She was bleeding around her teeth, and she may have been urinating blood.

This was nothing very unusual. It looked like a typical case of adult cerebral malaria, or malaria of the brain, a disease which is sometimes called blackwater fever. Blackwater fever causes patients to bleed into their eyeballs, to urinate brown or black blood, and to have hemorrhages from other openings of the body, and it causes brain damage, coma, and death. Sister Beata didn't waste any time trying to diagnose the woman's malady. Her goal was to deliver the woman's child and try to save two lives.

She helped Ms. Ndobe raise and bend her legs, and she inserted her bare hand into the birth canal and checked the dilation of the cervix. She withdrew her hand and saw that her hand and forearm were covered with blood. Ms. Ndobe was hemorrhaging from her womb, and so this seemed be a troubled birth or a spontaneous miscarriage. Several midwives or nursing aides got Ms. Ndobe onto the metal birthing table in order to help her deliver her fetus or baby. She continued to lose blood from her womb, which ran onto the table.

The aides kept a charcoal fire burning in a hearth outdoors, near the ward, where they heated basins of water. An aide brought a basin of hot water to the birthing table. They dipped a clean towel in the water and placed it around Ms. Ndobe's birth opening, to soften her skin and help ease the seeming agony of her contractions. They also used the towel to mop up the blood that was coming from her birth canal. They rinsed the towel in the basin, to get the blood out of it, got it saturated with fresh hot water, and they gently placed the towel back around the birth opening. They also used the towel to mop blood from the woman's thighs. When the time was right, Sister Beata brought out the child. It was stillborn and covered in blood.

When saw that the child was dead, Sister Beata might have crossed herself and offered a prayer. The placenta, a mushroom-shaped organ, was a mass of red tissue pressurized with swollen bubbles of hemorrhage. The placenta, however, had not been the only source of Ms. Ndobe's bleeding. After the fetus and placenta were delivered, her bleeding increased. After childbirth, any broken blood vessels in the uterus would quickly seal themselves through clotting, and any bleeding would stop. Ms. Ndobe's bleeding intensified into an uncontrollable hemorrhage pooling on the metal surface of the table. Ms. Ndobe was bleeding out. As her blood spread across the table, her blood pressure fell, her heart began beating rapidly, and her breathing became shallow and irregular. She died of blood loss and shock, either on the birthing table or in one of the beds in the ward. Afterward, Sister Beata probably used some of the hot water to rinse her hands and arms. Hemorrhage during childbirth was a major cause of death in younger women in Africa.

Five days after she delivered the stillborn infant, Sister Beata began feeling strange. A little tired, not quite herself. This feeling continued on for about twelve hours. Then, abruptly, she got a splitting headache and broke with a fever. This was likely malaria. You couldn't avoid malaria in the rain forest regions of the Congo Basin. She went to bed in her room in the community house at the mission. It was a low building that stood not far from the hospital, across from the mission church, a whitewashed structure that seemed to rise like a reef out of a pond of mud that formed around the church in the rainy season. Sister Beata became extremely weak, and she began throwing up. A fierce pain filled her lower abdomen, and she had several episodes of mild diarrhea. The diarrhea was hardly bad, but the pain in her abdomen increased until it became a paralyzing agony, and the pain went into her spine. She became extremely weak, hardly able to move her limbs or get up from her bed.

It was clear that Sister Beata needed to be in the hospital. Some nursing aides carried her out of the community house and placed her in a private room in the women's section of the main adult ward. There, Sister Beata began vomiting into a basin that a nurse held under her mouth as she lay in bed. We do not know exactly what Sister Beata's symptoms were, but judging from the accounts of investigating doctors, who later collected the story of Sister Beata from the surviving nuns at the Yambuku mission, her illness was dramatic and memorable.

She developed projectile vomiting, which is also called rocket vomiting, in which the stomach contracts violently and the vomitus is ejected up to two meters, or six feet, through the air. The vomitus would have ended up on the bed, on the floor, even perhaps

on the walls, and certainly on any nurses who were giving her care. On the first day of her vomiting, the vomitus had a normal appearance, but on the second day it came up streaked with blood, or it resembled red paint.

Her rocketing stopped when her stomach was completely empty, and yet her vomiting continued. She started bringing masses of a black, wet, curdlke material. The substance was recognizable in tropical countries as what is known as the black vomit. The black vomit is a sign of fatal case of yellow fever. It is hemorrhage from the lining of the stomach, and it consists of granules or curds of blackened blood which have been partly digested by stomach acid. Black vomit has a characteristic "wet coffee grounds" appearance, in which the granules are mixed with a dark, watery fluid that resembles weak black coffee. She may have come down with hiccups. The hiccups started for no apparent reason and wouldn't stop. Unable to move from her bed, she became incontinent. At first the issuances of stool were whitened with mucus and streaked with blood. As she got sicker, her stool changed into into a black liquid. The liquid, known as melena, is hemorrhage coming from the linings of the intestines. The membranes that form the linings of the intestines had died and were now undergoing bacterial decomposition. As the linings of the intestines decayed, blood began leaking from the necrotic tissue, filling the colon with blood. The blood became discolored and, eventually, when the colon was full, the blood was expelled. This was a form of profuse hemorrhage. A rash, consisting of red spots mixed with red bumps, spread around her torso. The red spots, called petechiae, were small hemorrhages occurring inside her skin. Some doctors refer to this type hemorrhage as bleeding into one's third space. The third space of the body is the soft tissue that lies between the skin and the muscles and fat. The third-space can fill up with fluid or blood. Sister Beata's facial expression changed, and her face settled into blank mask, seemingly without emotion, and with inflamed eyes.

Other Books

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