How epidemics take lives and bring global health into focus

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The world has seen a number of epidemics during the last 20 years, and due to globalization the threat of rapid spread has increased. Last week at TEDMED, a physician expert who was practicing in Vietnam during the outbreak of SARS explained the fear that comes with an epidemic and what the world has learned from working together and sharing information.

“All of us, at some point in our lives, are faced with some decisions and we don’t really ever quite understand the implications,” said Dr. Jeremy Farrar, a tropical medicine expert and director of the Wellcome Trust, a London-based biomedical research charity. After his medical training in neurology, Dr. Farrar moved to Vietnam, where he stayed for 18 years. And in February 2003, the SARS coronavirus that causes severe acute respiratory syndrome came to Vietnam.

“My professional life changed forevermore,” he said. “A very good friend of mine, who was working for the World Health Organization in Hanoi, was worried.” A person had flown from Hong Kong to Hanoi became very sick and was admitted to the hospital where his friend, Carlo Urbani, was working.

“The patient became much sicker over the next few days,” he said. But Dr. Urbani noticed also that many of the doctors and nurses were getting sick as well. “Carlo, working with great partnership and trust with the Vietnamese authorities, made an incredibly brave decision … he effectively quarantined that hospital … and, as a result, saved the country from a terrible SARS epidemic,” Dr. Farrar said.

Dr. Urbani alerted the world to the coming of SARS. He stayed in that hospital and looked after the patient. A few weeks later, he died as did a number of colleagues and friends.

“SARS lasted about six months—it spread to 14 countries and affected about 8,000 people, 800 of whom died. The World Bank estimated that those six months cost about $16 billion.”

“At the end of SARS there was a sigh of relief and the world moved on. However, a few months later, it felt as if things came back,” Dr. Farrar said. It was the Vietnamese holiday Tet. Dr. Farrar was working in the hospital that night and received a phone call from a friend who said he was seeing a
very sick young girl at another Hanoi hospital.

“The girl had a pet duck. And, tragically, the pet duck—the love of her life—died, and she buried it,” Dr. Farrar said. “And then she had a big argument with her brother and she dug that duck up again, cuddled it one last time, and then reburied it.”

A few days later, the girl got very sick and went to the hospital with a severe lung infection that progressed very quickly. “We had no idea if this was the recurrence of SARS … or whether this was something completely new,” Dr. Farrar said. “All of us working in global health remember our history of 1918, when 14 million people died of flu. Fourteen million people. That’s twice the number of people who died in the whole of the First World War.”

“Was this something new, something never heard of, something we have no knowledge of?” he asked. “Working through that Vietnamese holiday—terrified of going home because you never knew what you might take home with you—we were able to show that this was not the recurrence of SARS. This was a novel influenza virus which had presumably jumped across from her pet duck into this young girl.”

The young girl got better and went home. “But over the course of the coming weeks and months we saw many patients who came in with very severe [and] aggressive lung infections across Vietnam, in Indonesia, across Southeast Asia and indeed in England. Over 16 percent of them died.”

“We were left with a real sense of helplessness through SARs and bird flu,” Dr. Farrar said. “We really were not sure of what we were facing. I remember being in a meeting with all of the doctors and nurses across Ho Chi Minh City. We were talking about the patients and what might happen and somebody coughed …and the room went silent.”

### Learning from the past

“It was a terrifying time. It was the most frightening time of my life,” Dr. Farrar said. “In the intervening decade since, we’ve faced in the world a number of pandemics, some of which you’ve heard of: swine flu 2009. But some you may not have. There’s a virus circulating in the Middle East at the moment which comes from camels, but which can affect humans and can pass from one human to another. It’s been circulating for a few years now and we have no drug, we have no vaccine.”

“We are facing a changing world,” he said. “The environment is changing, the relationship between human beings and the natural world and human-animal interactions are changing as urbanization drives the 21st century. Global travel [has] allowed it to spread around the world, not in weeks but in hours.”
With Ebola we learned some harsh lessons, he said. “The first phase of that epidemic was an absolute disaster. The three countries—Sierra Leone, Guinea and Liberia—did not know what was happening. They had not the capacity to know that Ebola was spreading within their communities. And the world was far too slow to respond.”

“But in the second phase of the epidemic, the world changed. We relearned the lessons that health systems—strong and resilient and robust health systems around the world—are absolutely crucial both to the national health of those countries and also to all of our health. They’re essential to the global health security. And we must do everything we can to support those communities.”

“We also know the importance of surveillance,” Dr. Farrar added. “And [in] this modern world with smartphones and technology, the ability to identify things and share that information with colleagues and other countries is absolutely fundamental to saving lives.”

Thanks to information sharing, Nigeria was forewarned and stopped Ebola before it could take off.

We learned that there are gaps in our knowledge, Dr. Farrar said. “If you look at SARS, if you look at MERS [Middle East Respiratory Syndrome], if you look at Ebola, we have no drugs and we have no vaccines. Imagine going to the clinic with your family and a doctor or a nurse tells you, ‘I’m sorry, we have no treatment for you. Have no vaccine.’”

“It’s unthinkable,” he said. “But that’s what’s happened in all of these epidemics and at the end of each epidemic we’ve moved on … but I believe that this time will be different. During our Ebola epidemic, the amazing global coalition came together.”

Out of Ebola came one phenomenal achievement. “Even in the height of that panic, we were able to show that a vaccine for Ebola works,” Dr. Farrar said. “Never before during the course of an epidemic have we been able to show that.”

“The power of science and the power of innovation and the power of the ability to lead and make bold decisions transformed an epidemic and that was an absolutely crucial lesson. “When we think of the future … when we really have the courage to try, we can change the world,” he said.

At the start of the HIV/AIDS epidemic, Dr. Farrar was a young doctor. He saw many people die because there was no treatment. “But then we invested in science and we invested in people. We were able to bring antiretroviral drugs to the world and transform what was a death sentence into a manageable condition.”

“Although I’ve been personally terrified, I go home in the evening fearing what I might take in there, remembering the lesson from Carlo Urbani, I also know that I’ve never been more optimistic of our ability to change the world,” said Dr. Farrar. “If we grasp that moment, we can make the world a better
place for everybody.”

The world is a very small place, he said. What happens in Kathmandu will affect what happens in Kansas. “Remember that SARS devastated Toronto, Ebola came to London … Zika spread from Central and South America and is now in Florida. What happens in any part of the world will affect all of us.”