Will climate change amplify epidemics and give rise to pandemics?

Climate change is dominating our lives and causing a high level of uncertainty and stress. According to Saad Omer, director of the Yale Institute for Global Health, “With global climate change, more areas—even those away from the equator or at relatively high latitudes—may see unprecedented warming.”

This year, in Paraguay, there was a surprising and large outbreak of over 500,000 cases of chikungunya virus infection, about a year after the virus had been detected in the country. In 2022 and 2023, two deadly heat waves in the United States killed over 1600 people, and a heat wave in Western Europe was linked to 15,000 deaths. In addition, two devastating hurricanes—Ian in the United States and Fiona in the Caribbean—caused billions of dollars in damage and left thousands without housing.

This year, in Paraguay, there was a surprising and large outbreak of over 500,000 cases of chikungunya virus infection, about a year after the virus had been detected in the country. In 2022 and 2023, two deadly heat waves in the United States killed over 1600 people, and a heat wave in Western Europe was linked to 15,000 deaths. In addition, two devastating hurricanes—Ian in the United States and Fiona in the Caribbean—caused billions of dollars in damage and left thousands without housing.

Vibrio cholerae, the bacterium that causes cholera, registers a few hundred patients per year, but in 2022, over 128,000 cases were reported in 12 countries, with the majority occurring in South America, Africa, and the Arabian Peninsula. Although Malawi usually registers a few hundred cholera patients per year, there were 57,414 confirmed cases and 1733 deaths associated with the Cholera epidemic in 2022.

The prospect that pathogens frozen in the permafrost, for which no immunity currently exists, may be thawed and released as the Arctic warms is particularly concerning. For example, the 2017 outbreak of chikungunya virus in Italy was traced to an infected mosquito that had been transported from Africa. Notably, in an increasingly globalized world, the movement of people, animals, and cargo can further escalate disasters.

Contact us to get the latest news, advice, and opportunities in science, technology, and innovation.