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'Disease X' could cause the next pandemic, according to the WHO—or Ebola, SARS, or Nipah. 9 pathogens researchers are keeping a watchful eye on

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The World Economic Forum's run-of-the-mill pandemic preparation session was blown out of proportion late this week, leading to the phrase "Disease X" trending on both Twitter and Google at times.

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The annual meeting of the World Economic Forum—to be held in Davos, Switzerland, next week—is on more radars than usual this year, thanks to the name of one of the sessions: "[Preparing for Disease X](#)."

What is 'Disease X'?

"Disease X," according to the [World Health Organization](#), "represents the knowledge that a serious international epidemic could be caused by a pathogen currently unknown to cause human disease."

Indeed, the organization's head, Director General Tedros Adhanom Ghebreyesus, will speak at the event, in addition to Michel Demaré, chair of the board of [AstraZeneca](#), Brazil Minister of Health Nisia Trindade Lima, and Jamil Edmond Anderlini, editor in chief of Politico Europe, [among others](#).

The run-of-the-mill pandemic preparation session was blown out of proportion late this week, leading to the phrase "Disease X" trending on both Twitter and [Google](#) at times. Right-wing social media accounts [slammed the session](#), charging that world leaders would convene to discuss plans to impose vaccine mandates, restrict free speech, and even plan pandemics themselves.

On Thursday night, former Trump-era Assistant Secretary for Public Affairs for the U.S. Treasury Department and [Fox News](#) analyst [Monica Crowley](#) [tweeted](#) a baseless warning that "unelected globalists at the World Economic Forum will hold a panel on a future pandemic 20x deadlier than COVID."

"Just in time for the election, a new contagion to allow them to implement a new WHO treaty, lock down again, restrict free speech and destroy more freedoms," she wrote. "Sound far-fetched? So did what happened in 2020."

Dr. Amesh Adalja, senior scholar at the Johns Hopkins Center for Health Security, tells *Fortune* that those in the medical and public health professions "have always conducted thought experiments and tabletop exercises to prepare for pandemics."

"These exercises serve the vital function of identifying strengths and weaknesses, as well as highlighting important aspects of response that merit further refinement," he

says.

“To arbitrarily suggest these exercises and meetings are part of some kind of conspiracy evades the actual purpose they serve and the problems on which they are trying to gain traction, all for the nihilistic purpose of compromising pandemic preparedness and brazen pandering,” he added.

Dr. Stuart Ray, vice chair of medicine for data integrity and analytics at Johns Hopkins' Department of Medicine, told *Fortune* that it would be “irresponsible” for world leaders not to meet at the forum.

“There have been multiple such events in recorded history, and the recent coronavirus pandemic taught us that rapid response can save millions of lives,” he said. “Coordination of public health response is not conspiracy, it's simply responsible planning.”

Such meetings should be publicized because “such planning requires oversight, appreciation for personal impact on personal and economic freedom, and impact on special populations,” he added. “It makes good sense for a global public health organization, scientific leaders, and interested private individuals to be involved.”

The WHO's ‘priority pathogens,’ aside from ‘Disease X’

The WHO maintains a list of “[priority pathogens](#)” that “pose the greatest public health risk due to their epidemic potential and/or whether there are no, or insufficient, countermeasures” available.

Last updated in 2018, an updated list was expected last year and is now expected during the first half of 2024, [according to the group](#).

While the list is far from exhaustive and doesn't necessarily indicate the most likely cause of the next epidemic or pandemic, here are the known pathogens global public health officials are keeping an eye on, in addition to “Disease X.”

Ebola & Marburg virus diseases

[Viruses in this family](#) cause hemorrhagic, or bloody, fevers, which are typically accompanied by bleeding from bodily orifices and/or internal organs. The family consists of five strains of [Ebola](#) in addition to [Marburg](#)—an extremely similar virus

that made headlines during an [outbreak in Equatorial Guinea](#) earlier this year.

On average, Ebola kills about 50% of those it sickens, though case fatality rates have ranged from 25%-90%, [according to the WHO](#). Marburg also kills around 50% of those it infects, though case fatality rates range from around 24% to 88%, [experts say](#). While there are [two licensed vaccines](#) for the deadliest strain of Ebola, Zaire, there aren't any for the four other strains. Nor is there an approved vaccine for Marburg, though [some are in development](#).

Crimean-Congo hemorrhagic fever

Like Ebola and Marburg, Crimean-Congo hemorrhagic fever is an acute viral hemorrhagic illness that can cause bleeding from bodily orifices. Symptom onset is sudden and can include fever, muscle ache, dizziness, neck pain, back ache, headache, sore eyes, and light sensitivity. Nausea, vomiting, diarrhea, abdominal pain, and sore throat may also occur, followed by sharp mood swings and confusion.

Two to four days later, agitation may turn into sleepiness, depression, and lassitude; abdominal pain may concentrate in the upper right quadrant; and the liver might become enlarged, [according to the WHO](#).

Other symptoms may include fast heart rate, enlarged lymph nodes, and a petechial rash (caused by bleeding into the skin) on internal mucosal surfaces like the mouth and throat, and on the skin. The rash may grow. Hepatitis is usually present. After the fifth day of illnesses, patients may suffer the failure of organs like the kidneys, liver, or lungs.

The case fatality rate for this illness—spread by ticks and the tissue of infected animals during and after slaughter—is around 30%. Most patients who die do so in the second week of illness. Those who recover generally begin to improve after the ninth or tenth day of illness.

Lassa fever

Like Ebola, Marburg, and Crimean-Congo hemorrhagic fever, Lassa fever is an acute viral hemorrhagic illness. But with a case fatality rate of 1%, it's far less deadly. The vast majority of those infected with Lassa fever—80%—have no symptoms.

For the other 20%, disease is severe. Symptoms usually start with [non-specific ailments](#) not unlike COVID or the flu—fever, weakness, and malaise—and then

progress to headache, sore throat, muscle pain, chest pain, nausea, vomiting, diarrhea, cough, and stomach pain. Facial swelling, collection of fluid in the lung cavity, and low blood pressure may develop, in addition to shock, seizures, tremor, disorientation, and coma. Multiple organ systems are often damaged. Those who survive may suffer from temporary or permanent deafness, in addition to transient hair loss and gait disturbance.

Those who die of the virus usually do so within two weeks of onset, [according to the WHO](#). Eighty percent of pregnant women in their third trimester who are infected die, in addition to their fetus. Rodents carry the virus and also shed it in their urine and feces.

Severe Acute Respiratory Syndrome (SARS-CoV-1)

The world's first known coronavirus pandemic [occurred in 2002](#), when SARS-CoV-1 was reported in China. It spread to more than two dozen countries in North and South America and Europe before being contained seven months later. SARS is thought to have originated in an animal population, [perhaps bats](#), before being passed to civet cats—a tropical animal that looks like a [mix of a dog and an ocelot](#)—and then to people. A spillover could happen again, experts say.

Symptoms include headache, body aches, mild respiratory symptoms, possible diarrhea, an eventual dry cough, and pneumonia in most. SARS sickened nearly 8,100 people and killed just under 10% of them from 2002 to 2003. There is no licensed vaccine for SARS, though researchers are working on universal coronavirus vaccines that could target both SARS and COVID, among other coronaviruses.

Middle East respiratory syndrome coronavirus (MERS)

SARS was the world's first identified killer coronavirus, and MERS was the second. Discovered in 2012 in Saudi Arabia, it caused [about 2,500 cases and 800 deaths](#). SARS has not been detected since 2004, but MERS continues to be reported sporadically, with [the latest report](#)—of three infections and two deaths—occurring in Saudi Arabia in August 2023.

COVID (SARS-CoV-2)

As Dr. Maria Van Kerkhove, head of WHO's emerging diseases and zoonoses unit, said at a January presser, the world is [still in a COVID pandemic](#), whether or not it wants to recognize it. So far, the official [COVID death toll](#) sits at 7 million, though

it's thought to be at least three times higher.

While the public health emergency of international concern (PHEIC) status ended in May 2023, a WHO committee could always choose to reinstate it, especially if the virus [evolved into a more severe form](#), according to Van Kerkhove. And that's entirely possible.

“We are concerned—deeply concerned—that this virus is circulating unchecked around the world, and that we could have a variant at any time that would increase severity,” [she said Friday](#). “This is not meant to be a scare tactic. This is a [scenario we plan for](#).”

Nipah and other henipaviral diseases

Nipah is a henipavirus, the [most lethal of paramyxoviruses](#). It was first identified in pigs in Malaysia and Singapore in the late 1980s, though its natural reservoir is fruit bats. The other henipavirus known to infect people, Hendra, was first noted in racehorses and humans in Australia in 1994. Both feature respiratory illness and severe flu-like symptoms, and may progress to encephalitis—inflammation of the brain—along with other neurologic symptoms and death.

Nipah kills between 45% and 75% of the people it infects. No licensed vaccines exist, though a vaccine by [Moderna](#), in coordination with the U.S. National Institute of Allergy and Infectious Diseases Vaccine Research Center, [is being evaluated](#).

Rift Valley fever

This virus is known for causing massive devastation among livestock. While it can be transmitted from animals to other animals and to humans as well, it's not yet known to transmit from humans to other humans. But with viral evolution, that could change.

Human infections occur through inoculation—for instance, via a wound through an infected knife, or through broken skin. Humans can also be infected via aerosols produced during the slaughter of infected animals. Human infection may also be possible through drinking unpasteurized or uncooked milk of infected animals, [according to the WHO](#). Additionally, human infection could occur through the bites of infected mosquitoes or blood-feeding flies.

Most infected humans don't develop symptoms; if they do, cases are mild. Symptoms

include the sudden onset of a flu-like fever, muscle pain, joint pain, and headache. Neck stiffness, light sensitivity, appetite loss, and vomiting are also possible. Such cases may be mistaken for meningitis.

Around 3% of cases will develop severe disease, and less than 1% will die. Severe disease usually takes one of three forms: ocular, meningoencephalitis, or hemorrhagic.

Zika virus

Like COVID, Zika virus-related microcephaly (a brain-related birth defect) was once declared a PHEIC by the WHO, from February through November of 2016. Most who are infected with the virus—transmitted primarily by *Aedes* mosquitoes—don't develop symptoms. Those who do usually experience rash, fever, conjunctivitis, muscle and joint pain, malaise, and headache for two to seven days.

More troubling, infection during pregnancy can result in infants with congenital malformations, in addition to early birth and miscarriage. It can also result in Guillain-Barré syndrome, neuropathy, and myelitis in adults and children, [according to the WHO](#).

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