

DECEMBER 29, 2024 | 5 MIN READ

Jimmy Carter, Who Has Died at Age 100, Spared Millions of People from Guinea Worm

Former president Jimmy Carter's charity has helped transform Guinea worm from a disease that used to infect millions to one that infects fewer than a dozen

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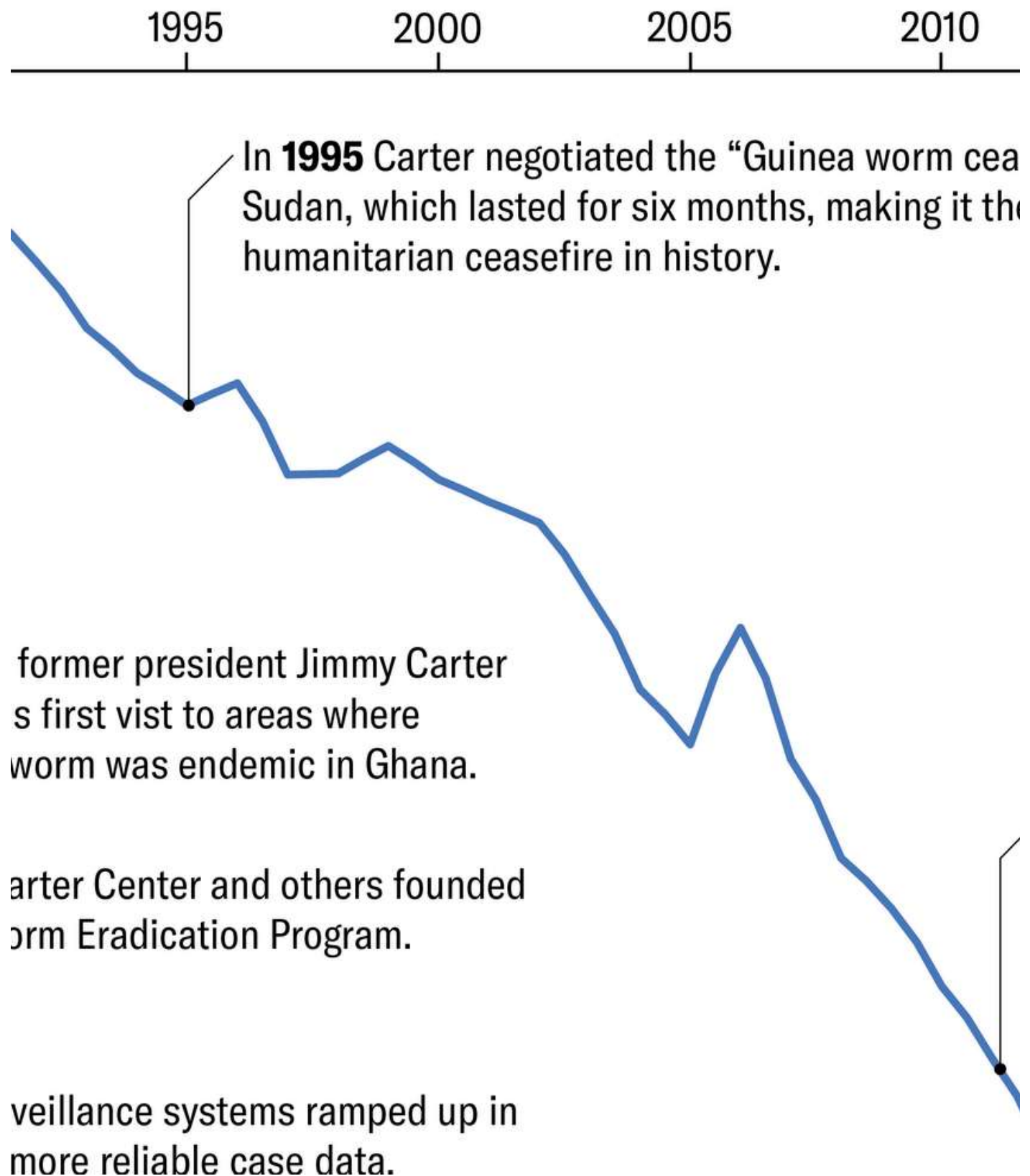
Public Health ▾

Former president Jimmy Carter was touring villages in Ghana during the late 1980s when he first encountered people with Guinea worm disease. This tropical disease involves an infection with parasitic worms that eventually emerge through a person's skin, and the 39th U.S. president was shocked by the plight of people infected by them. "Once you've seen a small child with a two- or three-foot-long live Guinea worm protruding from her body, right through her skin, you never forget it..." he later wrote. "In just a few minutes, [former first lady] Rosalynn and I saw more than 100 victims, including people with worms coming out of their ankles, knees, groins, legs, arms and other parts of their bodies."

Carter died Sunday, December 29, in Plains, Ga., after entering hospice care in mid-February 2023. His efforts to eradicate this horrific disease improved the lives and well-being of many of the world's poorest people. Guinea worm cases were averaging 3.5 million per year globally around the time Carter first toured Ghana. But thanks in large part to the efforts of the Carter Center, a nongovernmental organization (NGO) founded by the former president and former first lady Rosalynn Carter, who died in November 2023, the disease has been nearly stamped out. Surveillance data put the global tally at just 13 cases in 2022 spread across Chad, Ethiopia, South Sudan and the Central African Republic, according to Sharon Roy and Vitaliano Cama, scientists at the U.S. Centers for Disease Control and Prevention, who work with the Carter Center. Should caseloads dwindle to zero, Guinea worm will become only the second human disease in history (after smallpox) to be eradicated. These efforts are a credit to Carter's "bold vision, leadership and ability to create political will for supporting Guinea worm eradication in affected countries," Cama says.

The Carter Center set out to eradicate Guinea worm disease in 1986, shortly after the World Health Organization (WHO) targeted it for global elimination and five years after Carter left office. The disease is spread by drinking stagnant water infested with tiny fleas called copepods that contain Guinea worm larvae. While the fleas die in the human gut, Guinea worms—which are impervious to stomach acid—survive and start mating. Over the course of a year, a pregnant female worm will grow into an adult that migrates toward the host's skin. A blister soon forms, and when it bursts, the worm begins to slither its way out of the body. To relieve the burning pain this causes, infected victims will often dunk their affected body parts into water—in some cases, the same ponds or lakes that other people drink from. The submerged worms respond by releasing eggs that hatch into larvae, which are consumed by copepods, and the parasitic life cycle starts anew.

Cases over Time and the Carter Center



Zane Wolf; Source: The Carter Center

There aren't any vaccines or treatments for Guinea worm disease, and people cannot develop immunity against it. The traditional strategy for extracting an emerging worm has been to wind it around a stick, tugging on it a few centimeters per day. It's important not to pull too fast, because if the worm breaks apart, remnants in the body can cause secondary infections. But the best defense is prevention.

To move toward eradication, the Carter Center organized NGOs, national health ministries and donors around a single overarching goal: to provide affected villages with clean drinking water. A few simple interventions proved

highly effective. Village-based volunteers and supervisory health staff built protective walls around wells and other water sources to block people from wading in and seeding new infections. The Carter Center supplied villages with fine-mesh cloths that strain fleas out of drinking water, as well as filtered straws for personal use. Stagnant water was treated with a larvicide called temephos (which the WHO considers acceptable for use in drinking water), and rumored infections were tracked down and investigated.

Over time, more and more countries joined the effort. Meanwhile former president Carter “personally met with leaders in the nations where Guinea worm was endemic,” says Kashaf Ijaz, the Carter Center’s vice president for health programs. In 1995 Carter brokered a four-month [“Guinea worm cease-fire”](#) during Sudan’s civil war. The pause in fighting allowed health workers to distribute 200,000 cloth filters to impoverished areas, along with vaccines and drugs for other diseases such as river blindness, measles and polio.

“Sometimes the Guinea Worm Eradication Program provides the only touch point local people have with any sort of public health system,” says Jordan Schermerhorn, a global health specialist based in Austin, Tex. Schermerhorn spent more than a year between 2016 and 2017 working as a technical adviser to the Carter Center in southern Chad, often traveling by motorcycle to remote areas where people live in mud huts spread across a barren landscape. She and her colleagues would visit each of the villages within their purview roughly once a week to check for new cases and educate people on how to protect themselves from infection.

By this time, the eradication program was highly successful: only 25 human cases were documented worldwide in 2016. Yet the program has also been confronting an emerging problem: scientists, who once assumed Guinea

worms only infect people, have been finding them in other species. The worms were [discovered in dogs first and then later in cats and baboons](#). More recent evidence suggests frogs and fish may also carry the worms, although it's not clear if these animals transmit them. Carter Center staff have responded by urging villagers to report and tether infected dogs and to avoid eating inadequately cooked fish. They hypothesize that these are the routes through which most people and animals are becoming infected today.

Matthew Boyce, an assistant professor of health policy and management at Texas A&M University, says it's unclear if the Guinea worm is broadening its range or if its discovery in other animals merely reflects expanded disease surveillance. "It could be a classic case of 'the more you look, the more you find,'" he says. There's still no definitive evidence that these animals can transmit the disease in the absence of human hosts, something that could make it difficult to fully eradicate. Nevertheless, the WHO has pushed the target date for eradicating Guinea worm disease from 2020 to 2030. During a press conference in 2015, Carter said that he hoped the last Guinea worm would die before he did. While that didn't happen, Ijaz remains confident that eradication is still an achievable goal. "The last mile is the hardest," he says. "We have to stay committed and remain more focused than ever before."

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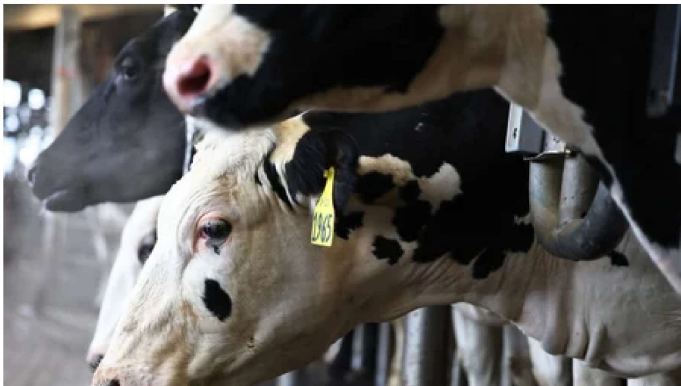


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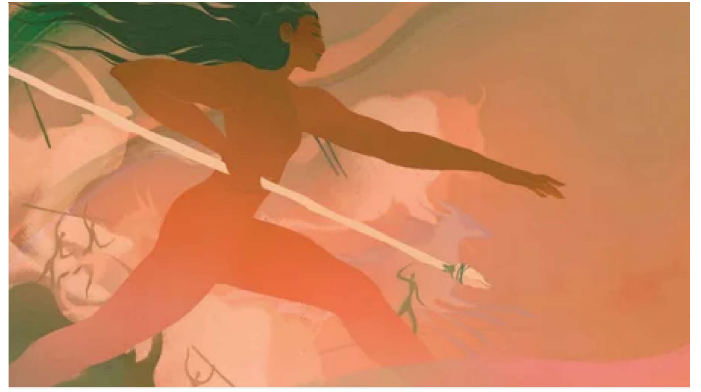


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