

Does decades-old smallpox vaccination protect against monkeypox?

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Health officials are scrambling to stretch scarce doses of vaccine to slow the mounting monkeypox outbreak, but do older people already vaccinated as kids for the related but deadlier smallpox virus already have protection?

The Centers for Disease Control and Prevention isn't betting on it. The

U.S. health agency says those exposed to the [monkeypox virus](#) "who have not received the smallpox [vaccine](#) within the last 3 years should consider getting vaccinated." And on Monday, the CDC endorsed a strategy of giving the [smallpox vaccine](#) under the skin—at a fifth of the usual dose.

While a limited number of studies offer hopeful signs that childhood [smallpox vaccination](#) offers some enduring protection decades later, health experts say aging [baby boomers](#) whose arms may still bear the marks of those childhood inoculations shouldn't assume they're immune.

"I wouldn't say there's no protection," said Andrew Noymer, an associate professor of population health and [disease prevention](#) at the University of California, Irvine. "But it's not something I would just count on."

Smallpox, a highly contagious ancient scourge that killed three out of 10 people it infected and left survivors pocked with scars, was eradicated worldwide in 1980 thanks to a global vaccination effort. The disease had been eliminated in North America and Europe since the early 1950s, and routine U.S. vaccinations ended in 1972.

The vaccine is based on a cousin of both smallpox and [monkeypox](#) and offers protection against both. Though monkeypox is not nearly as deadly as smallpox, it can still cause painful rashes and symptoms and potentially permanent scarring.

The U.S. now leads all countries in the current global monkeypox [outbreak](#), which has infected nearly 32,000 worldwide and nearly 12,000 in the U.S., including almost 2,000 in California and nearly 2,300 in New York.

Researchers studying a smallpox outbreak in Yugoslavia in 1972 in which 175 were infected and 35 died found that 105 people, or 60% of

those infected, were previously vaccinated for smallpox. But they noted a big difference in the fatality rate: 8% among the previously vaccinated and 35% among the unvaccinated.

Noymer said the study shows the waning ability of vaccination to ward off disease decades later. He noted that before smallpox was eradicated the CDC had recommended revaccination at five-year intervals.

The oft-cited assessment that smallpox vaccines are 85% effective against monkeypox infection was based on a 1988 study in Zaire, where smallpox vaccination ended in 1980. Noymer said that although the study was sound, it was not a clinical randomized controlled trial.

Seth Blumberg, assistant professor of medicine at UC San Francisco, said a study following the last U.S. monkeypox outbreak yielded encouraging results. That 2003 outbreak spread through pet prairie dogs that had been kept near infected African animals. A study found that people who'd been previously vaccinated against smallpox were among the infected but tended to have milder disease.

"Although immunity may wane with time, there seems to be some long-standing immunity particularly to [severe disease](#)," Blumberg said.

Another study in 2010 looked at the recurrence of monkeypox in the Democratic Republic of the Congo since the end of routine vaccination found that "thirty years after mass smallpox vaccination campaigns ceased, human monkeypox incidence has dramatically increased" in the rural African country. It also found "vaccinated persons had a 5.2-fold lower risk of monkeypox than unvaccinated persons."

"There wasn't any clear signs the vaccination was waning in its effectiveness," Blumberg said. "It's very reassuring."

So what does that mean for the current outbreak that primarily has spread among men who have sex with men but could easily spill over into the broader population?

Dr. Lee Riley, chair of infectious diseases and vaccinology at University of California, Berkeley, said that in the current outbreak "most of the cases of monkeypox we've seen are in people under the age of 50," which means they are not vaccinated.

"But we have seen cases in people who are older," Riley said. "Presumably, they would have been vaccinated against [smallpox](#)."

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