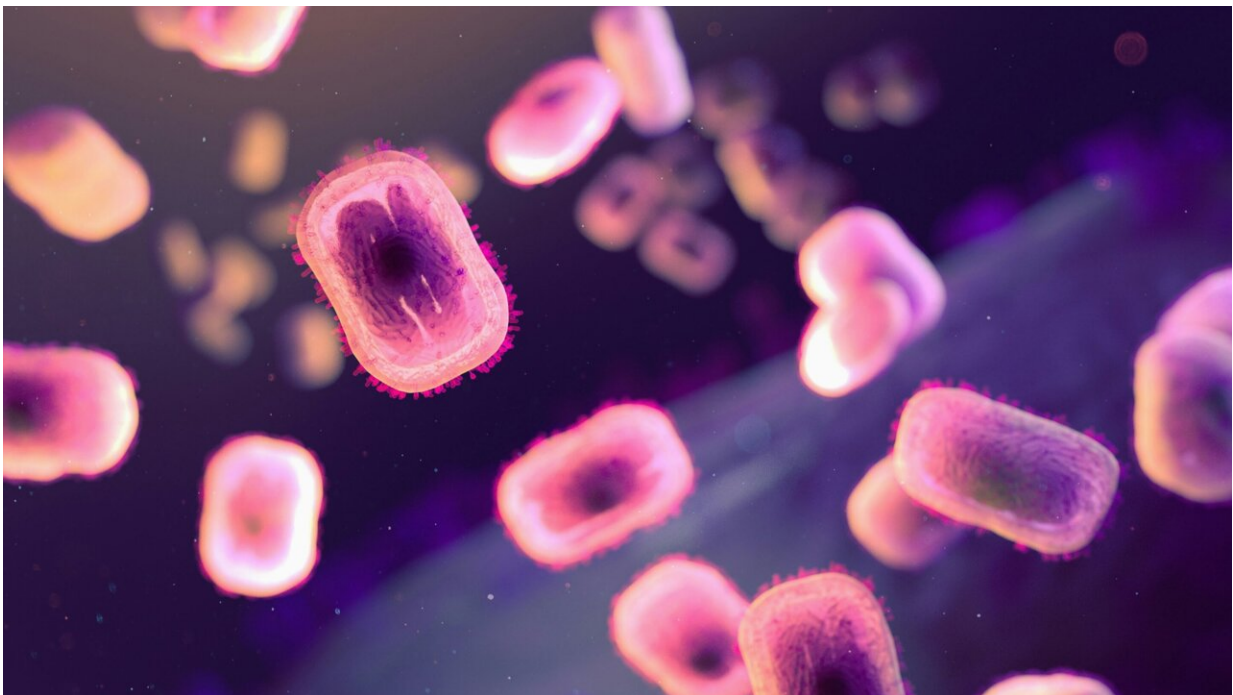


# One dose of smallpox vaccine found to be moderately effective in preventing mpox infection

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One dose of modified vaccinia Ankara-Bavarian Nordic (MVA-BN) smallpox vaccine is moderately effective in preventing mpox infection and should be made available to communities at risk, finds a study published by *The BMJ* .

With [mpox](#) infections rising again across the globe, the researchers say these findings "strengthen the evidence that MVA-BN is effective at preventing mpox [infection](#) and should be made available and accessible to communities at risk."

No randomized [clinical trials](#) of vaccination against mpox have been conducted. Estimates of the effectiveness of a single dose of vaccination from observational studies range from 36% to 86%, but observational data can be prone to bias, which can lead to inaccurate or misleading results.

To address this, researchers set out to estimate the real world effectiveness of one dose of MVA-BN against mpox infection using a technique called target trial emulation. This applies the design principles of randomized trials to observational data to estimate the causal effect of an intervention, while reducing the biases common to observational studies.

Their findings are based on men aged at least 18 years, with a history of being tested for syphilis and a laboratory confirmed bacterial sexually transmitted infection (STI) in the previous year, or who filled a prescription for preventative HIV treatment in the previous year.

A total of 3,204 men who received the vaccine were matched to 3,204 unvaccinated controls. Over the study period of 153 days, 71 mpox infections were diagnosed, 21 in the vaccinated group (a rate of 0.09 per 1,000 person days) and 50 in the unvaccinated group (a rate of 0.20 per 1000 person days).

The relative risk of infection in the vaccinated compared with the unvaccinated group was 0.42, thus the estimated vaccine effectiveness of one dose of MVA-BN against mpox infection was 58%.

The researchers acknowledge that rigorous matching led to a smaller sample size and they could not evaluate a two-dose regimen or duration of protection. Information on previous smallpox vaccination, sexual exposures, and individual level measures of social determinants of health were also lacking.

However, results are based on reliable data from a publicly funded health care system, and were similar after further analysis to account for other potentially influential factors, providing greater confidence in the conclusions.

The researchers therefore conclude that in the absence of randomized clinical trials, "our findings strengthen the evidence that MVA-BN is effective at preventing mpox infection and should be made available and accessible to communities at risk."

**More information:** Effectiveness of modified vaccinia Ankara-Bavarian Nordic vaccine against mpox infection: emulation of a target trial, *The BMJ* (2024). [DOI: 10.1136/bmj-2023-078243](https://doi.org/10.1136/bmj-2023-078243)

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