

Hidden Mpox Exposure Detected in Healthy Nigerian Adults, Revealing Under-Recognized Transmission

Exposure to the monkeypox virus can occur without recognized illness.

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The mpox virus appears to be circulating silently in parts of Nigeria, in many cases without the symptoms typically associated with the disease, according to new research led by scientists from the University of Cambridge and partners in Nigeria. The findings may have implications for controlling the spread of the disease.

In a study published today [January 20] in [Nature](#) Communications, researchers show that exposure to the mpox virus can occur without recognized illness, and that residual immunity from historic smallpox vaccination continues to shape how the virus spreads in human populations.

Mpox is a zoonotic virus – that is, one that initially jumped species to spread from animals to humans. It is closely related to smallpox. For decades, smallpox vaccination provided broad protection against related viruses such as mpox. Following the eradication of smallpox, routine vaccination stopped in 1980 and a growing proportion of the population lost this protection. This shift has been accompanied by renewed mpox transmission, culminating in outbreaks seen in multiple countries between 2022 and 2024.

While most public health attention has focused on symptomatic mpox cases, little is known about how often people may be exposed to the virus without developing classical disease.

To investigate this, the research team analysed archived blood samples from 176 healthy Nigerian adults who had originally been enrolled in SARS-CoV-2 vaccine studies. These included healthcare workers sampled in 2021 and community volunteers sampled in 2023. None of the participants had received mpox or smallpox vaccines in adulthood, and none were known to have been exposed to mpox.

Using a high-resolution multiplex antibody assay, the researchers measured responses to six distinct mpox virus antigens, different structural components of the virus that the immune system recognises and responds to, allowing detection of both the strength and breadth of immune responses.

At baseline, 24 (14%) of the participants showed antibody profiles consistent with residual immunity from historic smallpox vaccination. These responses were concentrated in people born before 1980, who were more likely to have been vaccinated during childhood. Their antibody responses were broader and stronger, recognizing multiple mpox antigens decades after vaccination campaigns ended.

However, the study also identified something unexpected.

Among 153 participants with follow-up samples collected approximately nine months later, five individuals — around 3% of the cohort — showed clear evidence of new immune boosting consistent with recent mpox exposure. These individuals had no recorded mpox diagnosis and did not report compatible illness, suggesting that exposure may have occurred without recognized disease.

Lead author Dr Adam Abdullahi, from the University of Cambridge and Institute of Human Virology Nigeria, said: “What we’re seeing is evidence that mpox exposure doesn’t always look like the textbook description. In some people, particularly in settings with partial population immunity, the virus may circulate quietly, leaving immune footprints that routine clinical surveillance will miss.”

The strongest antibody increases were directed against specific viral proteins, particularly B6R, A35R and M1R — antigens known to be important targets of protective immune responses. These findings suggest that certain immune markers could be especially useful for detecting recent exposure in population studies.

To place the immunological findings in an epidemiological context, the team also analyzed more than 100 mpox virus genomes collected in Nigeria over several years. Genomic reconstruction showed slow epidemic growth, frequent transmission dead-ends, and limited clustering – a pattern consistent with ongoing transmission constrained by partial immunity in the population.

Rather than explosive spread, the virus appears to persist through sporadic chains of infection, many of which fail to expand further.

Senior author Professor Ravindra Gupta is The Hong Kong Jockey Club Professor of Global Health from the Cambridge Institute of Therapeutic Immunology and Infectious Disease, University of Cambridge, and Co-Director of the Hong Kong Jockey Club Global Health Institute. He said: “Our data tell a consistent story. Mpox is not spreading unchecked in Nigeria and across the region, but neither is it absent. Instead, it appears to circulate at low levels, shaped by the lingering effects of smallpox vaccination in older generations.”

Importantly, the study found no major differences in immune responses between healthcare workers and the general population, suggesting that exposure is not confined to clinical settings. This points to broader community-level transmission rather than purely occupational risk.

The findings have important implications for public health surveillance. Current mpox monitoring relies heavily on detecting symptomatic cases, yet this approach may underestimate true

exposure, particularly where infections are mild or atypical.

Professor Alash'le Abimiku, Executive Director of the Institute of Human Virology Nigeria, said: "These findings show that mpox exposure can occur without obvious illness. Instead of relying solely on reported cases or symptoms, monitoring populations by testing blood samples for antibodies to reveal exposure to the virus will be important for understanding how it is spread and guiding targeted vaccination in our settings."

"If we only look for obvious disease, we will miss part of the picture," said Dr Abdullahi. "Monitoring blood samples gives us a way to detect exposure that doesn't result in clinic visits, especially in regions where health systems are stretched and requires strengthening."

The researchers stress that their findings do not suggest widespread silent epidemics but rather highlight the complexity of mpox transmission in populations with mixed immunity. The detected exposure rate reflects the study cohort and should not be interpreted as population prevalence.

The work also reinforces the long-lasting impact of smallpox vaccination. Individuals vaccinated decades ago still show broad immune recognition of mpox virus, which may help limit transmission even today.

Professor Gupta added: "This study reminds us that decisions made generations ago — such as ending smallpox vaccination — continue to shape how emerging infections behave. Understanding that legacy is crucial for designing rational vaccination and surveillance strategies now."

The authors note that further work is needed to link antibody patterns to functional protection, to study cellular immune responses, and to assess how conditions such as HIV infection may modify mpox immunity.

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Reference: Abdullahi, A et al. [Sero-genomic evidence 1 for occult mpox exposure in healthy Nigerian adults](#). Nat Comms; 20 Jan 2026; DOI: 10.1038/s41467-026-68335-1

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