

Why did the mpox epidemic wane? Belgian researchers offer a theory

April 13 2023



Credit: Pixabay/CC0 Public Domain

Did the recent mpox (formerly known as monkeypox) outbreak end because of "network immunity"? That's the theory being put forward by Belgian researchers at this year's European Congress of Clinical



Microbiology & Infectious Diseases (ECCMID) in Copenhagen, Denmark (April 15-18).

2022 saw a global outbreak of mpox, a viral infection that had not previously been documented as having sustained person-to-person transmission outside of Africa. There were more than 85,000 cases worldwide, with men who have sex with men at highest risk.

Cases rose rapidly from May 2022, before starting to decline a few months later. The reasons the outbreak waned are unclear.

Researcher Dr. Christophe Van Dijck, of the Institute of Tropical Medicine, Antwerp, Belgium, says, "The rapid rise in cases in May 2022 was likely caused by efficient viral transmission during <u>sexual contact</u> between individuals with high partner turnover in a dense and geographically extended sexual network.

"Insufficient knowledge of the disease as well as asymptomatic and presymptomatic transmission may have enhanced disease spreading. "

The subsequent decline in the epidemic after July 2022 remains insufficiently explained. Possible explanations include improved awareness and behavioral change in the population at risk and acquisition of vaccination- or infection-induced immunity.

"However, in most countries including Belgium, the decline in mpox cases had already started before a substantial proportion of the population at risk had been vaccinated."

Thus, Dr. Van Dijck and colleagues hypothesized that the epidemic waned due to a change in the behavior of the population at risk. To find out more, they used two sets of data collected at the Institute of Tropical Medicine in 2022. All participants provided informed consent.



The first set of data was from a questionnaire filled in at diagnosis by individuals with mpox.

Among the 155 individuals with mpox, 95.5% were gay and bisexual men who have sex with men (GBMSM) and the median number of sexual partners in the previous three weeks was two. Individuals diagnosed with mpox at the beginning of the epidemic reported more partners than those later in the epidemic (decline of 0.86 partners per week).

The second set of data was from a questionnaire filled in by men who were attending a clinic at the Institute for <u>pre-exposure prophylaxis</u> (PrEP, a drug that reduces the risk of getting HIV).

For the purposes of the analysis the PrEP users were divided into two groups, core PrEP-users (those with a history of syphilis infection) and non-core PrEP-users (no history of syphilis). A history of syphilis was used as a proxy for more risky sexual behavior in the past: a person who had syphilis is probably more centrally located in the sexual network than someone who never had syphilis.

Among 1,322 PrEP-users, 99.6% were GBMSM, of whom 55.9% visited the clinic repeatedly in 2022. At first visit, the median number of sexual partners in the previous three months was five. Core-group PrEP-users reported consistently more partners than non-core-group PrEP-users.

The number of partners in both the core and non-core-groups increased throughout 2022.

Dr. Van Dijck says, "The decline in number of partners reported by individuals diagnosed with mpox towards the end of the epidemic suggests a change in behavior of the population at risk. However, this



was not corroborated by data from the PrEP population, where the overall number of sexual partners increased over time.

"Therefore, we propose an alternative hypothesis: core members of the sexual network were infected with mpox first, peripheral members later. Infection-induced immunity of the individuals at the core of the sexual network generated 'network immunity' which halted the epidemic.

"We are currently working on serological and modeling studies to establish whether this hypothesis is true.

"In the meantime, we need to be aware that future mpox outbreaks may occur if the 'network immunity' is disturbed, for example by waning immunity of infected or vaccinated persons or when previously uninfected, peripheral members of the sexual network become more sexually active."

Provided by European Society of Clinical Microbiology and Infectious Diseases

Citation: Why did the mpox epidemic wane? Belgian researchers offer a theory (2023, April 13) retrieved 27 April 2024 from https://medicalxpress.com/news/2023-04-mpox-epidemic-wane-belgian-theory.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.