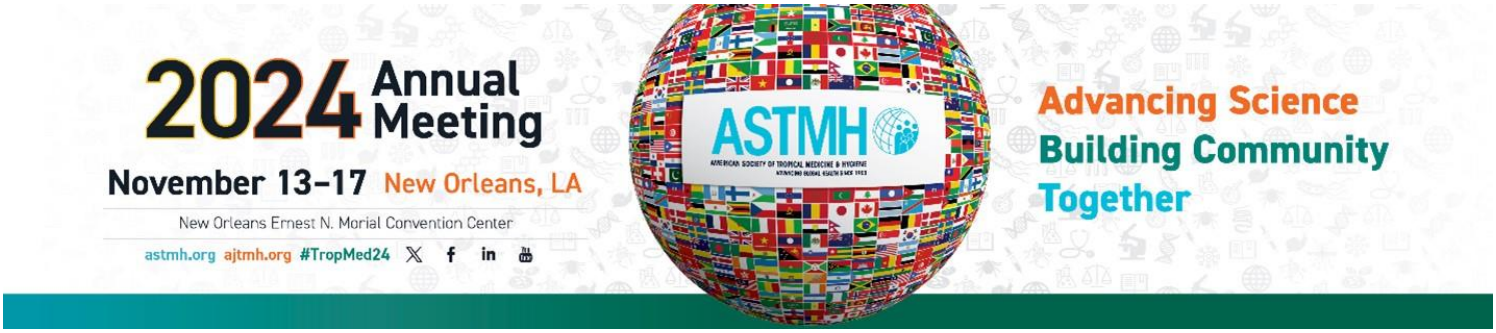

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Editor's Note: Supporting materials such as photos and abstracts are available on the password protected online press room: https://astmhpressroom.wordpress.com/assessment-of-mpox-surge-in-drc-reveals-potential-culprits-and-mysteries-behind-sharp-rise/

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Most Thorough Assessment to Date of Mpox Surge in Democratic Republic of Congo Reveals Potential Culprits and Mysteries Behind Sharp Rise

Mpox expert says waning smallpox immunity does not fully explain new hotspots emerging in areas with no history of mpox or contact with endemic regions

NEW ORLEANS (November 15, 2024) — A new analysis of mpox trends in the Democratic Republic of Congo (DRC), the country at the epicenter of a global resurgence of the disease, shows a four-fold increase in suspected cases over the last 14 years and suggests a mix of both logical and puzzling factors is contributing to the rise, according to a study presented today at the Annual Meeting of the American Society of Tropical Medicine and Hygiene (ASTMH).

The analysis, which examines more than a decade of surveillance data and laboratory testing from the DRC, shows cases increasing from 2,300 in 2010 to 14,600 in 2023. In terms of logical explanations, the study provides evidence that suggests the 1980 cessation of smallpox vaccination, which also protects against mpox, may be contributing to this rise because the population of the DRC with immunity to smallpox is steadily declining. For example, the study found that in 2023, 65% of suspected mpox cases in the DRC were in children under 15 years old.

But the study's lead author, Eugene Bangwen, MPH, a doctoral researcher at Belgium's Institute of Tropical Medicine, says waning smallpox immunity does not fully explain the substantial geographical expansion of the disease documented in the study. He said particularly puzzling are the outbreaks now occurring in regions of the DRC where mpox has not been previously reported — and that are isolated from provinces where the disease is an established threat.

"It's quite strange that hotspots are emerging in parts of the country that are mainly savannahs and grasslands, because in the DRC, mpox was previously a disease reported in highly forested regions," said Bangwen, who has spent several years tracking mpox trends in the DRC alongside colleagues at the country's National Biomedical Research Institute.

Bangwen said these differences could be evidence that at least a portion of the DRC's rising caseload is caused by independent spillover events, in which new outbreaks are sparked by human encounters with one of the many animal species that can carry the disease. The study

also notes that the rising caseload in the DRC involves branches from the family tree of mpox viruses, technically known as “clades,” that are distinct from those linked to the global outbreak in 2022 and 2023, which included cases in the United States and Europe.

CONFERENCE SCIENTIFIC ABSTRACT FOLLOWS BELOW

SESSION ABSTRACT LB-9328: Mpox in the Democratic Republic of Congo, 2010 - 2023: Analysis of over one decade of Epidemiological and Laboratory Surveillance Data

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In 2022, the global mpox outbreak drew considerable attention to the disease, whereas it has been endemic in West and Central Africa for several decades. The Democratic Republic of the Congo (DRC) has the highest burden. Until recently, over 95% of reported mpox cases were linked to the monkeypox virus (MPXV) Clade I. Due to cessation of smallpox vaccination, the incidence has been on the rise. Meanwhile, recent analyses of incidence are lacking. We retrospectively analyzed 14 years (2010-2023) of epidemiological and laboratory surveillance data from the DRC to assess trends in incidence, geospatial spread, seasonal variation, and age distribution of mpox cases. During this period, the DRC notified 60,967 suspect cases and 1,798 deaths, case fatality of 2.9%. The annual incidence based on reported suspected cases increased from 2.9 per 100,000 in 2010 to 11.5 per 100,000 in 2023. The highest incidence (46.46 per 100,000) and fatality (5.9%) were observed in children under 5. Incidence was higher in rural compared to urban areas. The median age among the confirmed cases was 13 years (IQR 6-24). Interestingly, following a quantile regression analysis, we observed a steady increase in the 95th percentile ages of confirmed mpox cases, meanwhile the median (50^{th} percentile) remained fairly stable over time. The disease expanded geographically, from 18/26 provinces, and 108/519 health zones affected in 2010 to 24/26 provinces, and 199/519 health zones by the end of 2023. No clear seasonal patterns were observed in the mpox occurence. Out of all 60,967 suspected mpox cases notified, 7,438 (12.2 %) were tested by real-time PCR with 57.1% positivity to orthopox-virus PCR. Of those individuals with a positive PCR, 2,261 (53.2%) were males. Samples tested negative for mpox were screened for Varicella Zoster virus with 41.6% positivity. Our findings reveal a significant surge in mpox incidence within the DRC. The increasing age in the 95th percentile of confirmed cases reaffirms the hypothesis that the (re-)emergence of mpox is likely due to a waning smallpox immunity. Akin to the strategies deployed in the 1980s, this highlights the importance of vaccination measures to avert future mpox outbreaks.

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