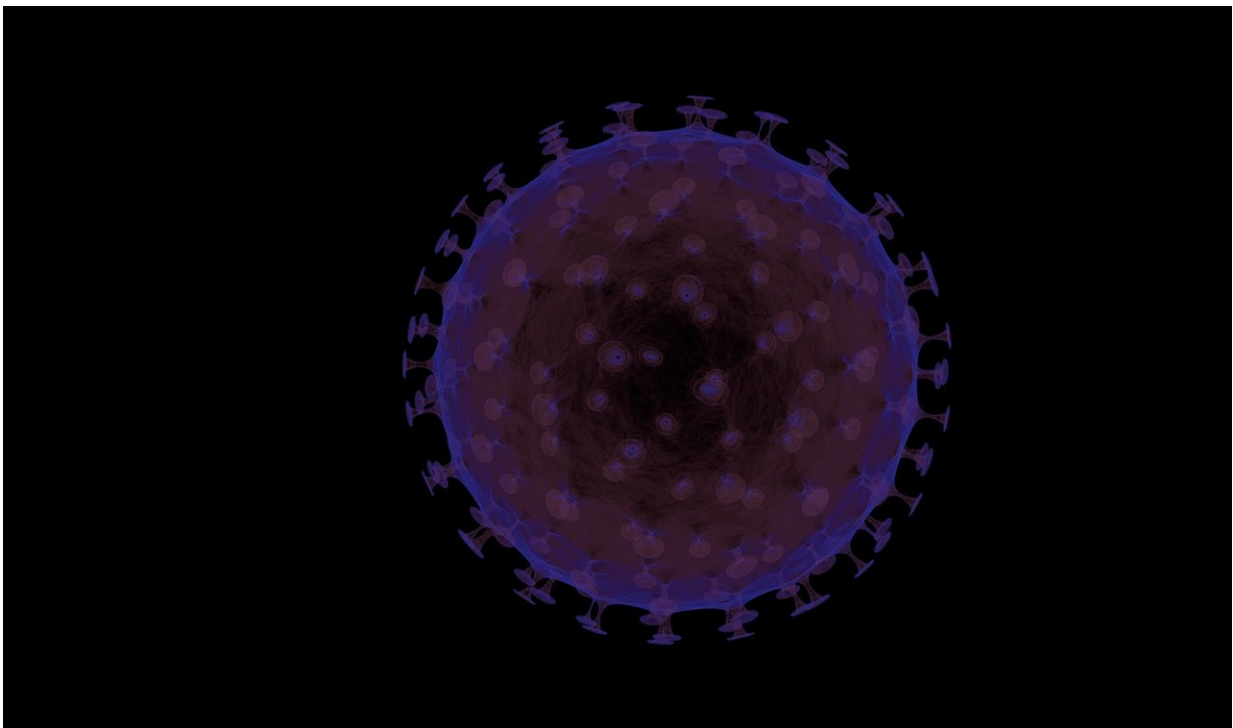


# Adenovirus type 4 infections more common than thought, large-scale systematic review finds

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A new study by scientists from Duke-NUS Medical School found that human adenovirus type 4 (HAdV-E4) infections—long thought to circulate only among U.S. military populations—are increasing in the general population around the globe. In their review of 144 studies, the

team found that more than 24,500 HAdV-E4 infections were reported from all geographic regions of the world except Central America and the Caribbean between 1960 and 2020, with 11.5 percent of infections in the general population. They highlight that infections in the general population have been on an upward trajectory since the first such infections were reported in the 1970s and call for continued investment in HAdV-E4 vaccine development.

Human adenovirus type 4 (HAdV-E4), which was discovered in 1953, is among more than 100 types of adenoviruses circulating in humans, most commonly causing infections in the respiratory tract and eye. When it was first discovered, the virus appeared to be largely confined to US military recruits who lived in crowded quarters and experienced increased stress during military training. Only rarely were infections detected in the general [population](#).

Today, HAdV-E4 is recognized as a re-emerging pathogen, as it is increasingly reported among general populations in the US and internationally. HAdV-E4-associated deaths, although rare, have been reported in the U.S., China and Singapore.

"Recognizing the potentially increasing clinical importance of this HAdV genotype, we sought to epidemiologically study the global distribution of clinical HAdV-E4 infections over time," said Dr. Kristen Coleman, Senior Research Fellow at the Duke-NUS' Emerging Infectious Diseases (EID) program and the lead author of this study.

The findings of the study published in *Clinical Infectious Diseases*, reveal that HAdV-E4 infections in the [general population](#) were first documented in the 1970s with 92 cases reported in the scientific literature. Reported cases jumped to 444 in the 1980s, and have been increasing each decade thereafter, with nearly 800 cases reported in the 2010s.

This increase aligns with a recent evolutionary change identified in the virus genome, which may have enabled the virus to better adapt to humans and allow for enhanced circulation outside of military populations.

"This is an important example of how molecular evolution of viruses can result in sustained human infections of clinical importance. The study also highlights the need for continued investment and development of vaccines against HAdV-E4," said Professor Gregory Gray from Duke-NUS' EID program, who is the corresponding author of this study.

"Adenoviruses circulate widely among humans and have triggered numerous disease outbreaks, particularly in hospital and military settings. In this review, our EID experts provide new insights on the genetic evolution and how this affects the viruses' clinical impact. Their insights provide a robust foundation to improve public health preparedness against potential [adenovirus](#) outbreaks among high-risk populations," said Professor Patrick Casey, senior vice-dean for research at Duke-NUS.

**More information:** Kristen K. Coleman, Emily R. Robie, Anfal Abdelgadir, Arthi S. Kozhumam, Raquel A. Binder, and Gregory C. Gray (2021). Six decades of Human Adenovirus Type 4 infections reviewed: increasing infections among civilians are a matter of concern. *Clinical Infectious Diseases*, [academic.oup.com/cid/advance-a ... /cid/ciab146/6157989](https://academic.oup.com/cid/advance-article-abstract/doi/10.1093/cid/ciab146/6157989)

Provided by Duke-NUS Medical School

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