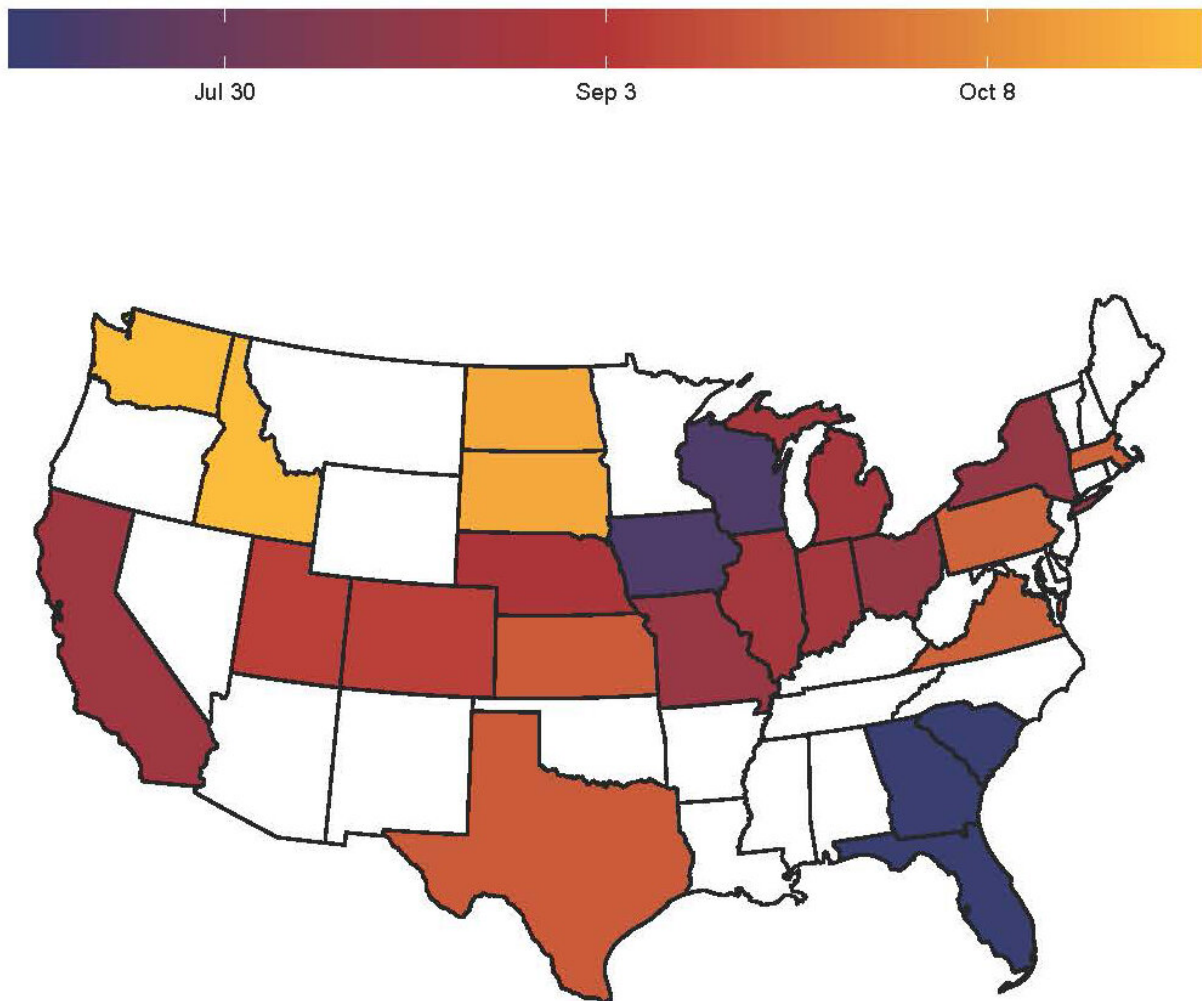


# Outbreak of a rare, polio-like syndrome likely prevented, postponed by social distancing

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Map of the center of gravity of enterovirus D68 cases in the U.S. predicted by

the pathogen extended resolution algorithm, from 2014-2019. Credit: S.W. Park et al., *Science Translational Medicine* (2021)

Social distancing not only helped slow the spread of COVID-19—it also may have prevented the transmission of an outbreak of a rare polio-like syndrome, according to Princeton University researchers.

Though uncommon, [acute flaccid myelitis](#) (AFM) is a critical spinal condition that causes weakness in the limbs, seriously diminishes motor function, and can lead to lifelong disabilities. The syndrome was first reported in the United States in 2012 and has been coming back every two years, hinting it could strike again in 2020.

Using epidemiological surveillance tools, the researchers showed that an AFM [outbreak](#) was likely to occur in 2020, but [social distancing](#) prevented its spread.

The reason was that social distancing reduced the occurrence of a respiratory illness known as enterovirus 68 (EV-D68), which the researchers found is strongly associated with AFM. EV-D68 is a virus found in infants and children that typically causes respiratory issues such as a runny nose, cough, or sneezing. While the definite cause of AFM remains inconclusive, it has been linked to [viral infections](#) and past studies have specifically identified a link to EV-68.

The Princeton-led research team sought to better understand the connection between AFM and EV-D68 and whether another outbreak might occur. Their findings, published in the journal *Science Translational Medicine*, suggest that vaccines targeting EV-D68 could lessen future outbreaks of AFM.

"Though currently uncommon, this syndrome has been increasing in frequency with each successive outbreak since 2014, making it critically important to better understand the patterns and drivers behind it," said first author Sang Woo Park, a Ph.D. student in Princeton's Department of Ecology & Evolutionary Biology.

"Our results underline the importance of epidemic surveillance for projecting future impact of infectious diseases," said Bryan Grenfell, the Kathryn Briger and Sarah Fenton Professor of Ecology and Evolutionary Biology and Public Affairs and an associated faculty member in Princeton's High Meadows Environmental Institute.

Grenfell and Park conducted the study with Kevin Messacar of the Children's Hospital at the University of Colorado; Margarita Pons-Salort of Imperial College London; Lindsay Meyers and Camille Cook, former and current employees, respectively, of bioMérieux Inc. or its subsidiaries; and Jeremy Farrar of the Wellcome Trust.

EV-D68 outbreaks have been reported every two years, coinciding with the outbreak pattern of AFM, the researchers said. To confirm this connection, they analyzed patterns of EV-D68 outbreaks using unique surveillance data acquired from BioFire Syndromic Trends (Trend), a cloud-based network of de-identified pathogen results from around the world collected in near-real time.

The results revealed that EV-D68 outbreaks were occurring every two years in many states, though not all. In states such as Ohio, EV-D68 outbreaks revealed more intricate patterns. Still, the association between EV-D68 and AFM syndrome was strong.

Likely thanks to social distancing, AFM cases remained low in 2020. There were only 31 cases in 2020 compared to 153 cases in 2016 and 238 cases in 2018.

"Fortunately, we saw very little EV-D68 circulation in 2020 and few cases of AFM compared to what was expected, but that makes it even more important to be as prepared as possible for what could be coming in 2021 or beyond," said Park.

**More information:** S.W. Park et al., "Epidemiological dynamics of enterovirus D68 in the US and implications for acute flaccid myelitis," *Science Translational Medicine* (2021). [stm.sciencemag.org/lookup/doi/... scitranslmed.abd2400](https://stm.sciencemag.org/lookup/doi/10.1126/scitranslmed.abd2400)

Provided by Princeton University

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