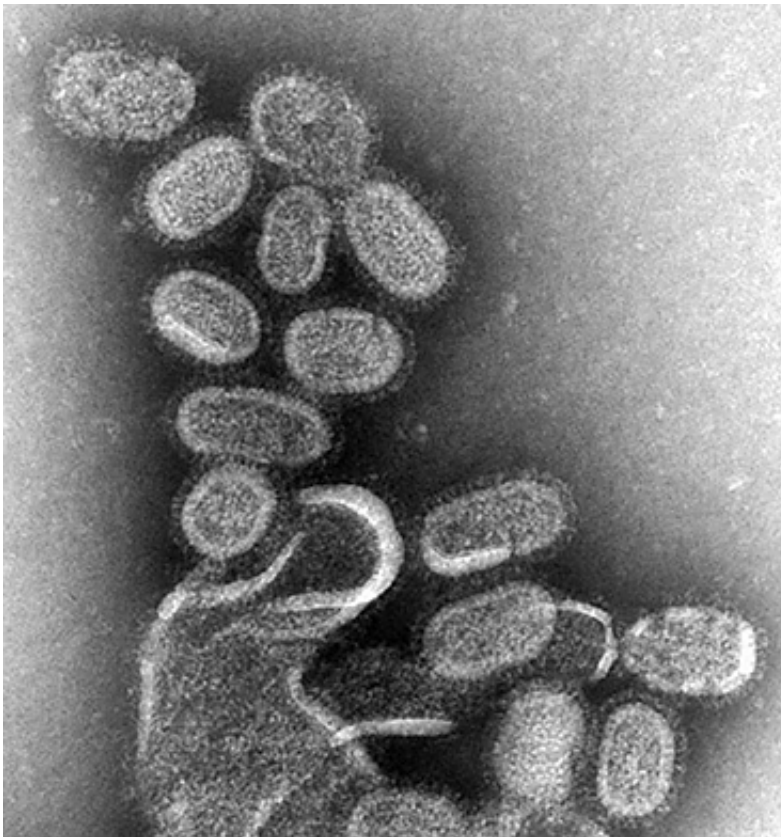


Adults only really catch flu about twice a decade, suggests study

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Electron microscopy of influenza virus. Credit: CDC

Adults over the age of 30 only catch flu about twice a decade, a new study publishing March 3rd in *PLOS Biology* suggests.

Flu-like illness can be caused by many pathogens, making it difficult to

assess how often people are infected by [influenza](#).

The immune system responds to [flu](#) viruses by producing antibodies that specifically target proteins on the virus surface. These proteins can change as the virus evolves, but we keep antibodies in the blood that have a memory for strains we've encountered before.

Researchers analysed blood samples from volunteers in Southern China, looking at [antibody levels](#) against nine different influenza strains that circulated from 1968 to 2009.

They found that while children get flu on average every other year, [flu infections](#) become less frequent as people progress through childhood and [early adulthood](#). From the age of 30 onwards, flu infections tend to occur at a steady rate of about two per decade.

Dr Adam Kucharski, who worked on the study at Imperial College London before moving to the London School of Hygiene & Tropical Medicine, said: "There's a lot of debate in the field as to how often people get flu, as opposed to flu-like illness caused by something else. These symptoms could sometimes be caused by common cold viruses, such as rhinovirus or coronavirus. Also, some people might not realise they had flu, but the infection will show up when a blood sample is subsequently tested. This is the first time anyone has reconstructed a group's history of infection from modern-day [blood samples](#)."

Dr Steven Riley, senior author of the study, from the Medical Research Council Centre for Outbreak Analysis and Modelling at Imperial, said: "For adults, we found that influenza infection is actually much less common than some people think. In childhood and adolescence, it's much more common, possibly because we mix more with other people. The exact frequency of infection will vary depending on background levels of flu and vaccination."

In addition to estimating the frequency of flu infection, the researchers, from the UK, the US and China, developed a mathematical model of how our immunity to flu changes over a lifetime as we encounter different strains of the virus.

The model supported evidence from other studies that the strains of influenza virus we encounter earlier in life evoke stronger immune responses than those we meet later.

The findings will help understanding how the immunity in the population affects the evolution of [flu viruses](#), and potentially make predictions about how the virus will change in the future. They could also help scientists consider how immunity to historical strains will influence the way vaccines work and how effective they will be.

Dr Kucharski said: "What we've done in this study is to analyse how a person's immunity builds up over a lifetime of flu infections. This information helps us understand the susceptibility of the population as a whole and how easy it is for new seasonal strains to spread through the population."

More information: Kucharski AJ, Lessler J, Read JM, Zhu H, Jiang CQ, Guan Y, et al. (2015) Estimating the Life Course of Influenza A(H3N2) Antibody Responses from Cross-Sectional Data. *PLoS Biol* 13(3): e1002082. [DOI: 10.1371/journal.pbio.1002082](https://doi.org/10.1371/journal.pbio.1002082)

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