

Key benefits of large-scale use of universal over conventional flu vaccines

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Universal vaccines that protect against multiple strains of influenza virus at once could offer key population-level benefits over conventional seasonal vaccines, according to a new study published in *PLOS Computational Biology*.

Flu-causing viruses are continually evolving. To keep up, scientists must update vaccines regularly so that people can be protected against whichever seasonal [strains](#) pose the greatest risk. However, researchers are working to develop universal vaccines that could protect against multiple flu strains without needing to be updated.

Research on universal flu vaccines has mostly focused on their potential effects in individual patients. To better understand their effects at the population level, Rahul Subramanian of The University of Chicago and colleagues mathematically modeled the interactions between vaccination, [flu transmission](#), and flu virus evolution.

The model revealed that deployment of universal vaccines across large populations could reduce flu transmission more efficiently than conventional vaccines. It could also slow the evolution of new strains of [influenza virus](#) and bolster herd immunity, protecting against the emergence of especially dangerous pandemic strains.

"New influenza vaccines could, for the first time, maintain their effectiveness in the face of viral evolution," Subramanian says. "In doing so they could transform the way we manage influenza in future."

However, conventional vaccines that are well-matched against circulating flu strains are highly effective and are likely to continue to play an important role. Subramanian says that an optimal approach may be to strategically use universal vaccines alongside conventional vaccines to protect at-risk groups while controlling transmission in the whole population.

More information: Subramanian R, Graham AL, Grenfell BT, Arinaminpathy N (2017) Universal or Specific? A Modeling-Based Comparison of Broad-Spectrum Influenza Vaccines against Conventional, Strain-Matched Vaccines. *PLoS Comput Biol* 13(1): e1005204. [DOI: 10.1371/journal.pcbi.1005204](https://doi.org/10.1371/journal.pcbi.1005204)

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