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**For more information and materials:**  
Kayli Hiban  
[communications@CDDEP.org](mailto:communications@CDDEP.org)

## **FLU VACCINE COVERAGE LINKED TO REDUCED ANTIBIOTIC PRESCRIBING**

***Researchers at CDDEP, Johns Hopkins University, and the University of Maryland School of Medicine assessed the impact of influenza vaccination coverage on state-level antibiotic prescribing rates in the United States between 2010 and 2017.***

Washington, DC – Up to 76 percent of all outpatient antibiotic prescriptions in the United States may be inappropriate, with peak prescribing associated with the flu season. Evidence suggests that influenza vaccines may reduce overall and inappropriate antibiotic use by reducing the burden of influenza-like illness commonly mistreated with antibiotics, as well as preventing secondary bacterial infections. While flu vaccines have been proven to reduce severe illness, evidence is lacking on the link between flu vaccination and antibiotic prescribing at the population level in the US.

To examine this association, researchers analyzed state-level data from IQVIA and the US Centers for Disease Control and Prevention’s FluVaxView on antibiotic prescribing rates and influenza vaccine coverage between January and March of each year from 2010 to 2017.

“Getting the flu vaccine doesn’t guarantee you will not get sick, but it is effective at reducing both the likelihood and the severity of disease at the individual level, which for individuals would translate into fewer trips to the doctor and less chance of being prescribed antibiotics. Since people who don’t get sick don’t transmit the disease to others, we believed that the more people who got a vaccine in an area, the less illness there would be and the fewer antibiotic prescriptions there would be,” said Eili Klein, lead study author and CDDEP Senior Fellow.

Utilizing fixed-effects regression analysis adjusted for socioeconomic differences, access to health care, childcare centers, climate, vaccine effectiveness, and state-level differences, the study found that a ten percent increase in influenza vaccination coverage was associated with a 6.5 percent reduction in antibiotic use, or 14.2 fewer antibiotic prescriptions per 1,000 individuals. Increased vaccination rates were tied to significant reductions in antibiotic prescribing rates among pediatric (6 percent), elderly (5.2 percent), and adult populations (4.2 percent). Specifically, the researchers found that across all ages, flu vaccine coverage was significantly and negatively associated with prescribing rates for macrolides, tetracyclines, narrow-spectrum penicillins, and aminoglycosides- all of which are antibiotic classes commonly prescribed for upper respiratory tract infections or severe infections, which flu vaccines prevent.

“The flu is more common in children and the elderly, and thus this is fairly suggestive that the vaccine is limiting the severity of disease in these populations leading to lower rates of antibiotic prescribing,” said Klein.

Overall, results indicate that flu vaccination is associated with reduced antibiotic use in the United States, which suggests that expanding flu vaccine coverage could reduce inappropriate antibiotic prescribing. The study titled, “The Impact of Influenza Vaccination on Antibiotic Use in the United States, 2010-2017” was published on June 6, 2020 in Open Forum Infectious Diseases and is available online [here](#).

962 Wayne Ave, Suite 530  
Silver Spring, MD 20910, USA  
p +1 202.939.3300

B-25, 3rd Floor, Lajpat Nagar 2  
New Delhi – 110024, INDIA  
p +91.11 41103551

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