



Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major article

Influenza A (H1N1) 2009 monovalent and seasonal influenza vaccination among adults 25 to 64 years of age with high-risk conditions—United States, 2010

Peng-jun Lu MD, PhD*, Amparo Gonzalez-Feliciano MPH, Helen Ding MD, MSPH, Leah N. Bryan MPH, David Yankey MS, Elizabeth A. Monsell BS, Stacie M. Greby DVM, Gary L. Euler DrPH

Immunization Services Division, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, Atlanta, GA

Key Words:

Immunization
Influenza vaccine
BRFSS
Multivariable logistic regression
H1N1 vaccination

Background: Seasonal influenza vaccination has been routinely recommended for adults with high-risk conditions. The Advisory Committee on Immunization Practices recommended that persons 25 to 64 years of age with high-risk conditions be one of the initial target groups to receive H1N1 vaccination during the 2009-2010 season.

Methods: We used data from the 2009-2010 Behavioral Risk Factor Surveillance System survey. Vaccination levels of H1N1 and seasonal influenza vaccination among respondents 25 to 64 years with high-risk conditions were assessed. Multivariable logistic regression models were performed to identify factors independently associated with vaccination.

Results: Overall, 24.8% of adults 25 to 64 years of age were identified to have high-risk conditions. Among adults 25 to 64 years of age with high-risk conditions, H1N1 and seasonal vaccination coverage were 26.3% and 47.6%, respectively. Characteristics independently associated with an increased likelihood of H1N1 vaccination were as follows: higher age; Hispanic race/ethnicity; medical insurance; ability to see a doctor if needed; having a primary doctor; a routine checkup in the previous year; not being a current smoker; and having high-risk conditions other than asthma, diabetes, and heart disease. Characteristics independently associated with seasonal influenza vaccination were similar compared with factors associated with H1N1 vaccination.

Conclusion: Immunization programs should work with provider organizations to review efforts made to reach adults with high-risk conditions during the recent pandemic and assess how and where they can increase vaccination coverage during future pandemics.

Published by Elsevier Inc. on behalf of the Association for Professionals in Infection Control and Epidemiology, Inc.

Annual epidemics of influenza in the United States occur typically during the late fall through early spring. During these annual epidemics, rates of serious illness and death are higher among those who have medical conditions that place them at increased risk for complications from influenza.¹ Vaccination of persons with high-risk conditions is a key public health strategy preventing influenza-related morbidity and mortality in the United States.¹ Prevention of illness through comprehensive vaccination programs is far more cost-effective than case management and other outbreak control measures.¹ Optimal use of vaccination strategies can not only reduce influenza-related morbidity and mortality but can also minimize missed work days because of illness.¹ Persons with high-risk

conditions are at increased risk of complications from influenza infection, and annual influenza vaccination was recommended for persons with high-risk conditions by public health services as early as 1960.^{1,2}

In April 2009, a H1N1 virus was determined to be the cause of respiratory illness that spread to every region in the United States, throughout North America, and was identified in many other areas of world. Influenza morbidity caused by the H1N1 pandemic remained above seasonal baselines throughout spring and summer 2009 and was the cause of the first pandemic since 1968.^{1,3} During the H1N1 pandemic, adults <65 years of age were at higher risk for influenza-related complications, particularly those who had underlying medical conditions, compared with typical influenza seasons.^{1,4-6} In July 2009, the Advisory Committee on Immunization Practices (ACIP) issued recommendations regarding the use of a new monovalent vaccine for protection from infection with the 2009 influenza A (H1N1) virus.³ Persons 25 to 64 years of age with high-risk conditions were 1 of 5 initial target groups recommended

* Address correspondence to Peng-jun Lu, MD, PhD, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road, NE, Mail Stop A-19, Atlanta, GA 30333.

E-mail address: lhj8@cdc.gov (P.-j. Lu).

Conflicts of interest: None to report.

to receive the influenza A (H1N1) 2009 monovalent vaccine (H1N1 vaccine) when it became available in October 2009.³

Questions were added to the ongoing Behavioral Risk Factor Surveillance System (BRFSS) survey as part of an influenza supplemental survey during the 2009-2010 influenza season to assess H1N1 and seasonal influenza vaccination coverage in the United States. The objective of this study was to address and examine the following questions: (1) What was the national H1N1 and seasonal influenza vaccination coverage among adults with high-risk conditions? (2) Did vaccination coverage vary by specific types of high-risk conditions? (3) What was state-specific vaccination coverage for adults with high-risk conditions? (4) What factors were significantly associated with influenza vaccination among adults with high-risk conditions? Results from this analysis may help immunization programs and provider organizations review specific activities that were implemented to ensure vaccination of adults with high-risk conditions and prepare for future pandemics.

METHODS

Data from the 2009-2010 BRFSS influenza supplemental survey were used for this analysis. The BRFSS is a continuous, population-based telephone survey coordinated by state health departments in collaboration with the Centers for Disease Control and Prevention (CDC). The BRFSS collects information from noninstitutionalized adults ≥ 18 years of age. The objective of the BRFSS is to collect uniform, state-specific data on self-reported preventive health practices and risk behaviors that are linked to preventable infectious diseases, chronic diseases, and injuries. Individuals are selected randomly using a multistage cluster design. Data are weighted by age, sex, and, in some states, race/ethnicity, to reflect each area's estimated adult population.⁷

The BRFSS Influenza Supplemental Survey began in October 2009 in 49 states, the District of Columbia, and 2 territories. Questions were included to collect H1N1 vaccination information. Those major questions included "There were two ways to get the H1N1 flu vaccination, one is a shot in the arm and the other is a spray, mist or drop in the nose. Since September, 2009, have you been vaccinated either way for the H1N1 flu?" and "During what month did you receive your H1N1 flu vaccine?" Questions regarding seasonal influenza vaccination included "Now I will ask you questions about seasonal flu. A flu shot is an influenza vaccine injected into your arm. During the past 12 months, have you had a seasonal flu shot?" and "During what month did you receive your most recent seasonal flu shot?" "The seasonal flu vaccine sprayed in the nose is also called FluMist. During the past 12 months, have you had a seasonal flu vaccine that was sprayed in your nose?" and "During what month did you receive your most recent seasonal flu vaccine that was sprayed in your nose?" Regarding high-risk conditions, respondents were asked "Have you ever been told by a doctor, nurse, or other health professional that you had asthma?", "Do you still have asthma?", "Have you ever been told by a doctor that you have diabetes?", "Have you ever been told by a doctor that you had a heart attack, also called a myocardial infarction?", "Have you ever been told by a doctor that you had angina or coronary heart disease?", "Has a doctor, nurse, or other health professional ever said that you have lung problems, other than asthma, kidney problems, anemia, including sickle cell or a weakened immune system caused by a chronic illness or by medicines taken for a chronic illness?", and "Do you still have (this/any of these) problem(s)?"

We defined high-risk persons as individuals who self-reported 1 or more of the following: diabetes, asthma, myocardial infarction, coronary heart disease, lung problems other than asthma, kidney problems, anemia (including sickle cell), and a weakened immune system caused by illness or medicines.

Variables included in the analyses were demographic: age group (25-49 years, 50-64 years), race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, other), education (less than high school education, high school graduate, higher than high school graduate), employment status (employed, unemployed), household income (<\$20,000, \$20,000-\$49,999, \$50,000-\$74,999, \geq \$75,000), marital status (married, widowed/divorced/separated, never married), and metropolitan statistical area (MSA) (in MSA, not in MSA); health status (perceived health status [excellent/very good, good, fair, poor]), asthma status (yes, no), diabetes status (yes, no), heart diseases status (yes, no), and status of high-risk conditions (yes, no); access to care (medical insurance status [insured, uninsured]), needed to see a doctor in the previous year but could not (yes, no), having a primary doctor (yes, no), and interval since last routine checkup (<1 year, \geq 1 year); behavioral risk factors (activity limitations [yes, no]); and smoking status (current smoker, former smoker, never smoker).

The Council of American Survey Research Organizations response rate is the product of 3 other rates: the resolution rate, which is the proportion of telephone numbers that can be identified as either for a business or residence; the screening rate, which is the proportion of qualified households that complete the screening process; and the cooperation rate, which is the proportion of contacted eligible households for which a completed interview is obtained. For the 2009-2010 BRFSS influenza supplemental survey, the median Council of American Survey Research Organizations state response and cooperation rates were 54% (range: 52%-62%) and 76% (range: 74%-80%), respectively.

SUDAAN (Software for the statistical analysis of correlated data, Research Triangle Institute, Research Triangle Park, NC) was used to calculate point estimates and 95% confidence intervals (CIs). To maximize precision and validity for national and state-specific H1N1 vaccination coverage, we analyzed data from interviews conducted during November 2009 through June 2010 to estimate the cumulative proportion of persons vaccinated during October 2009 through May 2010 using the Kaplan-Meier survival analysis procedure. For national and state-specific 2009-2010 seasonal influenza vaccination coverage, we analyzed data from interviews conducted during October 2009 through June 2010 to estimate the cumulative proportion of persons vaccinated during August 2009 through May 2010 using the Kaplan-Meier survival analysis procedure. Multivariable logistic regression models restricted to individuals interviewed during March through June 2010 were performed to determine adjusted prevalence ratio and identify factors independently associated with vaccination. Respondents who reported unknown or refused influenza vaccination status were excluded from this analysis (H1N1 vaccination = 7%, seasonal influenza vaccination = 3%). Vaccination status was imputed for individuals who said they received vaccination but did not report their month and year of vaccination (H1N1 vaccination = 3%, and seasonal influenza vaccination = 5%). Variables were determined to be significant at $P < .05$.

RESULTS

A total of 182,242 individuals 25 to 64 years of age was included in the analysis. Of the 182,242 adults aged 25 to 64 years, 24.8% reported having high-risk conditions. Demographic characteristics of the study population are given in Table 1. Distributions on each characteristic differed significantly among adults with high-risk conditions compared with adults without high-risk conditions. Adults with high-risk conditions were more likely to be higher age, unemployed, lower income, having a primary doctor, a routine checkup in the previous year, and being current smokers compared with adults without high-risk conditions (Table 1).

Overall, among adults 25 to 64 years of age with high-risk conditions, H1N1 and seasonal vaccination coverage estimates

Download English Version:

<https://daneshyari.com/en/article/2637776>

Download Persian Version:

<https://daneshyari.com/article/2637776>

[Daneshyari.com](https://daneshyari.com)