

## Original Research

# Impact of Pharmacist Immunization Authority on Seasonal Influenza Immunization Rates Across States



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### ABSTRACT

**Purpose:** The goal of this study was to investigate the impact on immunization rates of policy changes that allowed pharmacists to administer influenza immunizations across the United States.

**Methods:** Influenza immunization rates across states were compared before and after policy changes permitting pharmacists to administer influenza immunizations. The study used Behavioral Risk Factor Surveillance System (BRFSS) survey data on influenza immunization rates between 2003 and 2013. Logistic regression models were constructed and incorporated adjustments for the complex sample design of the BRFSS to predict the likelihood of a person receiving an influenza immunization based on various patient health, demographic, and access to care factors.

**Findings:** Overall, as states moved to allow pharmacists to administer influenza immunizations, the odds that an adult resident received an influenza immunization rose, with the effect increasing over time. The average percentage of people receiving influenza immunizations in states was 35.1%, rising from 32.2% in 2003 to 40.3% in 2013. The policy changes were associated with a long-term increase of 2.2% to 7.6% in the number of adults aged 25 to 59 years receiving an influenza immunization (largest for those aged 35–39 years) and no significant change for those younger or older.

**Implications:** These findings suggest that pharmacies and other nontraditional settings may offer

accessible venues for patients when implementing other public health initiatives. (*Clin Ther.* 2017;39:1563–1580) © 2017 The Authors. Published by Elsevier HS Journals, Inc.

**Key words:** influenza, immunizations, pharmacy services, vaccines.

### INTRODUCTION

Immunization is essential in the prevention of infectious diseases. The Centers for Disease Control and Prevention (CDC) identified immunizations as a public health achievement that has contributed to the 30-year increase in life expectancy in the United States since 1900.<sup>1</sup> The CDC also notes decreases in “cases, hospitalizations, deaths, and healthcare costs associated with vaccine-preventable diseases” from 2001 to 2010.<sup>2</sup> The seasonal influenza vaccination is one of the most common immunization programs in the United States.<sup>3</sup>

Despite the preventive effects of immunizations, however, many people who should get immunized do not. In the 2014 to 2015 flu season, only 38% of adults aged between 18 and 64 years were immunized against the flu. In that same season, 66.7% of adults aged ≥65 years were immunized.<sup>4</sup> The national immunization goals are 80% and 90% for these population segments, respectively.<sup>5</sup>

The economic burden of seasonal influenza in the United States is substantial. Recent research has

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estimated that the annual human and economic burden of influenza in the adult population aged  $\geq 50$  years exceeded \$16 billion in 2013.<sup>6</sup> This figure includes direct medical costs for treatment, as well as lost wages related to decreased worker and household productivity for the year of infection. The Bureau of Labor Statistics noted a spike in absences due to illness, injury, or medical appointments from December to March of 2005 through 2010, overlapping with the peak flu season.<sup>7</sup>

People fail to get seasonal influenza immunizations for many reasons. Lack of access to the administration of the immunization is a major barrier. For example, researchers have found that lack of a regular health care provider and insurance are significantly related to the nonreceipt of a seasonal influenza immunization.<sup>8</sup>

In a recent study, researchers found that 41% of people in the United States obtained seasonal influenza immunizations from nontraditional settings such as the workplace, retail establishment, or community center during the 2010 to 2011 influenza season. Supermarkets and drug stores provided 18.4% of immunizations for those aged  $\geq 18$  years during the 2010 to 2011 season, which increased to 20.1% during the 2011 to 2012 season.<sup>9,10</sup> Providing immunizations to consumers in such settings can help them overcome accessibility barriers through extended service hours and the multiple locations provided by these sites. A study of uptake rates for pneumococcal and herpes zoster vaccinations showed higher rates across states that had broader vaccination authority for pharmacists.<sup>11</sup>

Although immunizations provided in nontraditional settings have been shown to be cost-effective for healthy working adults aged  $< 65$  years, study results on overall cost-effectiveness of immunizations for this group of adults, when calculating net benefit due to avoided illness, tend to be sensitive to where the immunizations are provided, being more favorable in lower cost settings.<sup>12–14</sup> An analysis using a national database of commercial and Medicare administrative health care claims from 2010 found that the mean cost paid per enrollee per seasonal influenza immunization was notably lower at pharmacies (\$21.57) compared with physician offices (\$29.29) and other medical settings (\$24.20).<sup>15</sup>

Currently, all 50 states and Washington, DC, allow pharmacists to administer immunizations to adults.<sup>16</sup> Regulations allowing pharmacists to administer

immunizations to adults were adopted in certain states in the 1990s, while many others have passed legislation in the subsequent years.<sup>17</sup>

A study by Steyer et al<sup>18</sup> found that people aged  $\geq 65$  years had significantly higher seasonal influenza immunization rates in states in which pharmacists could provide immunizations than those who resided in states in which pharmacists could not provide immunizations. The study compared seasonal influenza immunization rates from 1995 (before any policy change allowing pharmacists to administer vaccinations) versus the rates in 1999, two years after a group of states allowed pharmacist-administered immunizations. Since the research was published, additional states have passed legislation allowing pharmacists to administer a variety of immunizations to adults.

McConeghy and Wing<sup>19</sup> estimated the effects of pharmacy-based immunization statute changes on the volume of vaccine prescriptions (on a per-capita basis) as well as the impact on adult vaccination rates. Results indicate a large increase in vaccinations dispensed in community pharmacies between 2007 and 2013 (3.2 million to 20.9 million) and a small nonstatistically significant increase in adult vaccination rates.

The present study builds on previous research by investigating the effect of changes in policies that allowed pharmacists to administer seasonal influenza immunizations. States varied in the timing of their policy changes. One half of states changed their policies in 2004 or later; the first state to do so was Michigan (1990), and the last were South Carolina and Louisiana (2010).

## MATERIALS AND METHODS

### Data Sources

We collected survey data from the 2003 to 2013 Behavioral Risk Factor Surveillance System (BRFSS) landline files to determine rates of seasonal influenza immunization for selected states of interest.<sup>20</sup> The BRFSS is an annual telephone survey of  $> 350,000$  adults nationwide and is maintained by the CDC. The BRFSS queries respondents for health risk behaviors, preventive measures, health care access, and utilization. Data are collected over the course of the year on a rolling monthly basis; records in the same BRFSS year may have been collected in any month of that year. BRFSS records from

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