

Influenza Vaccination Changes in New Mexico Following Updated ACIP Recommendations for Adults 65 years and Older and Antiviral Usage Patterns for Patients Hospitalized with Influenza

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Introduction:

Influenza virus circulation in the United States typically occurs seasonally, with infections most common from late fall to early spring. While most people who become ill with influenza will recover without serious complications, many develop serious illness leading to hospitalization or death¹. Even otherwise self-limited illness can lead to significant time off from work and school. To reduce the impact of influenza, the Centers for Disease Control and Prevention (CDC), many professional organizations, and the Advisory Committee on Immunization Practices (ACIP) recommend annual influenza vaccination for all individuals aged ≥ 6 months who do not have contraindications¹. Additionally, antiviral drugs approved for influenza treatment taken within 2 days of symptom onset can lessen symptoms and shorten the duration of illness². For adults hospitalized with influenza illness, antiviral treatment can reduce severity and death from influenza².

In August 2022 the ACIP updated its recommendations for influenza vaccination in adults ≥ 65 years old¹ recommending that all adults in this age group preferentially receive high-dose or adjuvanted influenza vaccinations, specifically: quadrivalent high-dose inactivated influenza vaccine (HD-IIV4), quadrivalent recombinant influenza vaccine (RIV4), or quadrivalent adjuvanted inactivated influenza vaccine (aIIV4). The New Mexico Department of Health (NMDOH) investigated whether the updated ACIP recommendations were associated with a change in vaccine administration among New Mexico residents. We also assessed the use of antiviral medication among New Mexicans hospitalized for influenza.

Methods:

Vaccination records within the New Mexico State Immunization Information System (NMSIIS) were reviewed for adults ≥ 65 years old from August 2021-July 2023. High-dose and adjuvanted vaccines (hereafter referred to as 'high-dose') were identified by vaccine product ('CVX') code³. If an individual received multiple vaccinations in the same influenza vaccination season, they were categorized as a 'high-dose' vaccine if they received a high-dose vaccine during that season for this analysis. An influenza vaccination season was defined as August 1st-July 31st of the following year. 2021 population estimates were produced by the University of New Mexico Geospatial and Population Studies Center⁴. Individuals reporting Hispanic ethnicity, regardless of race, are classified in the 'Hispanic' category. When ethnicity is reported as 'Non-Hispanic' or is missing, individuals are categorized by their reported race. County-level social vulnerability index (SVI) data came from the CDC Agency for Toxic Substances and Disease Registry⁵. Counties were grouped into low (≤ 0.4), medium ($>0.4-0.7$), and high ($>0.7-1.0$) SVI categories, with increasing SVI reflecting greater healthcare vulnerability and resilience from socioeconomic, community, and environmental risk factors. Changes in vaccine type received between seasons is reported for residents in NMSIIS who received influenza vaccination in both seasons. Antiviral use reported in the medical record of patients hospitalized for influenza was derived from New Mexico FluSurv-NET⁶. This system identifies residents of seven counties in New Mexico (Bernalillo, Chaves, Doña Ana, Grant, Luna, San Juan, and Santa Fe) who were hospitalized for influenza infections during

the 2021-2022 and 2022-2023 influenza seasons (October 1 through April 30). As a result of high case volume during the 2022-23 influenza season, an age-stratified random sample of cases had full chart reviews to identify characteristics of the infection and hospital course, including the use and timing of antiviral medications. Cases were sampled at the following rates: 50% for 0-4 years, 50% for 5-17 years, 25% for 18-49 years, 10% for 50-64 years, 25% for >65 years, and 100% of deaths during hospitalization or within 30 days of discharge. Charts missing antiviral administration dates were classified as 'Unknown.'

Results:

Both overall influenza vaccination and high-dose vaccination rates increased from the 2021-22 influenza vaccination season (60% and 42% vaccinated, respectively) to the 2022-23 season (63% and 49%, respectively)(Table 1). Among those vaccinated, 78% of persons ≥ 65 years old received a high-dose vaccine in the 2022-23 season. Hispanic residents, who represent 33% of New Mexico residents ≥ 65 years old, had the lowest influenza vaccination rates (53%) and lowest uptake of the high-dose vaccine (38%) in the 2022-23 season. High-dose vaccination rates increased between seasons for all categories of age, sex, race/ethnicity, and SVI, with the most notable increase among American Indian/Alaska Native residents (34% vs. 63%).

Medium and High SVI areas experienced larger increases in overall and high-dose vaccination from 2021-22 to 2022-23 but remained below areas with low SVI. Only one of 33 counties in New Mexico has an SVI below 0.4, limiting the interpretation of this finding.

Among residents linked across both vaccination seasons, more change was toward high-dose vaccination (Table 2). American Indian/Alaska Native residents had the lowest proportion of individuals reverting (3.8%) or continuing to receive standard dose (9.7%) vaccination, whereas Hispanics had the highest proportion (9.4% and 16.6%, respectively). Nearly half of the increase from standard to high-dose vaccination between seasons was offset by the reversion to standard dose.

Documented antiviral use for persons hospitalized with influenza decreased slightly between influenza seasons both overall (82% vs. 77%) and within 48 hours of diagnosis (79% vs. 71%) (Table 3.).

Discussion:

Influenza vaccination coverage among adults ≥ 65 years old in New Mexico has increased between the previous two seasons but remains below the full population Healthy People 2030 target of 70%⁷. There was an increase in high-dose vaccine administered after the ACIP recommended high-dose vaccine for adults ≥ 65 years old, however, 22% of those vaccinated last season received a standard dose. Side effects experienced with the high-dose vaccine or limited availability of high-dose vaccines may have influenced the reversion to the standard vaccine. Nonetheless, there is room to improve the benefit of high-dose vaccination and further efforts to inform vaccine providers are warranted.

High-dose Influenza vaccination rates increased the most for American Indian/Alaska Native residents. This may reflect the impact of health system policy changes within the Indian Health Service and tribal health leadership support for vaccination. Increasing recommended influenza vaccination for Hispanic residents is a priority in New Mexico.

Early antiviral use in patients hospitalized with influenza can be life-saving. Early antiviral use was absent or unknown in 29% of patients during the last influenza season. The decrease in antiviral use

between seasons may be attributable to the higher case counts from influenza and other respiratory diseases (e.g., RSV, COVID-19) affecting quality of care in 2022-23, warranting more attention to diagnosis and early treatment with antiviral agents in the current season.

Limitations:

While providers are mandated to report to the NMSIIS database, not all vaccinations are reported. Database managers estimate that approximately 80% of all vaccinations will be reported to NMSIIS, thus under-representing population vaccination rates. It is also possible that the vaccinations not reported to NMSIIS differ from those reported. For example, if providers who do not report to NMSIIS are also less likely to follow ACIP recommendations, it is possible that our study over-estimated high-dose vaccination rates.

Conclusions:

As an important source of input to patient decisions, healthcare providers should encourage vaccinations against respiratory infections, including the use of high-dose influenza vaccines for persons 65 years and older. These data suggest that office policies and support of community health leaders can improve the uptake of recommended vaccines. In hospitalized patients, providers can improve health outcomes by early use of proper antiviral medications.

Table 1. Vaccination Rates per 100 by Season, Vaccine Type, and Population Characteristics

	Influenza Vaccination Season					
	2021-22			2022-23		
Population Characteristics	High Dose	Standard Dose	Overall	High Dose	Standard Dose	Overall
Age Groups						
65-74	41	19	60	47	14	61
75+	43	18	60	53	14	67
Sex*						
M	40	17	57	50	13	63
F	43	20	63	48	15	63
Race/Ethnicity						
AI/AN	34	42	76	64	11	74
Asian / PI	54	25	79	64	19	83
Black	36	16	51	49	13	62
Hispanic	32	18	50	38	15	53
White	44	14	58	50	12	62
Social Vulnerability Index						
Low	57	14	71	60	10	69
Medium	36	16	52	42	14	56
High	37	16	53	43	12	56
Total						
	42	18	60	49	14	63

Table 2. Vaccination Patterns among Persons Linked Across both Influenza Vaccination Seasons[§].

Population Characteristics	Percentage of Total Cohort				Population Total
	Standard to High	High to Standard	Stayed High	Stayed Standard	
Overall					
	17	8	63	12	169536
Age Group					
65-74	17	8	62	12	100957
75+	16	8	65	11	68579
Sex					
M	16	8	64	11	73245
F	17	8	62	12	96261
Race/Ethnicity					
AI/AN	47	4	40	9	12206
Asian / PI	17	9	62	12	3146
Black	17	8	64	12	2224
Hispanic	16	9	58	16	47224
White	13	8	69	10	99723
Social Vulnerability Index					
Low	12	7	76	5	1979
Medium	15	8	64	13	16462
High	16	8	64	12	132189

[§] Cases were dropped from analysis when missing data for that characteristic; SVI (county) was missing for 11% of cases, Race/ethnicity for 3% of cases, and sex for .02% of cases.

Table 3. Antiviral Usage Characteristics by Season

	2021-22	2022-23
Any Antiviral Usage		
Yes	82	77
No	18	18
Unknown	0	5
Antivirals within 48 hours of diagnosis		
Yes	79	71
No	2	5
Unknown/NA	19	23

References:

1. [Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season | MMWR \(cdc.gov\)](#)
2. [Influenza Antiviral Medications: Summary for Clinicians | CDC](#)
3. [IIS Data Code Sets | CDC](#)
4. [Population Estimates :: Geospatial and Population Studies | The University of New Mexico \(unm.edu\)](#)
5. [At A Glance: CDC/ATSDR Social Vulnerability Index | Place and Health | ATSDR](#)
6. [Influenza Hospitalization Surveillance Network \(FluSurv-NET\) | CDC](#)
7. [Increase the proportion of people who get the flu vaccine every year — IID-09 - Healthy People 2030 | health.gov](#)