



Review of Recent Morbidity and Mortality Weekly Report (MMWR) Publications: COVID-19 Vaccination in the Long-term Care Setting

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Effectiveness of Up-to-Date COVID-19 Vaccination in Preventing SARS-CoV-2 Infection Among Nursing Home Residents – United States, November 20, 2022–January 8, 2023

Weekly / June 23, 2023 / 72(25);690–693

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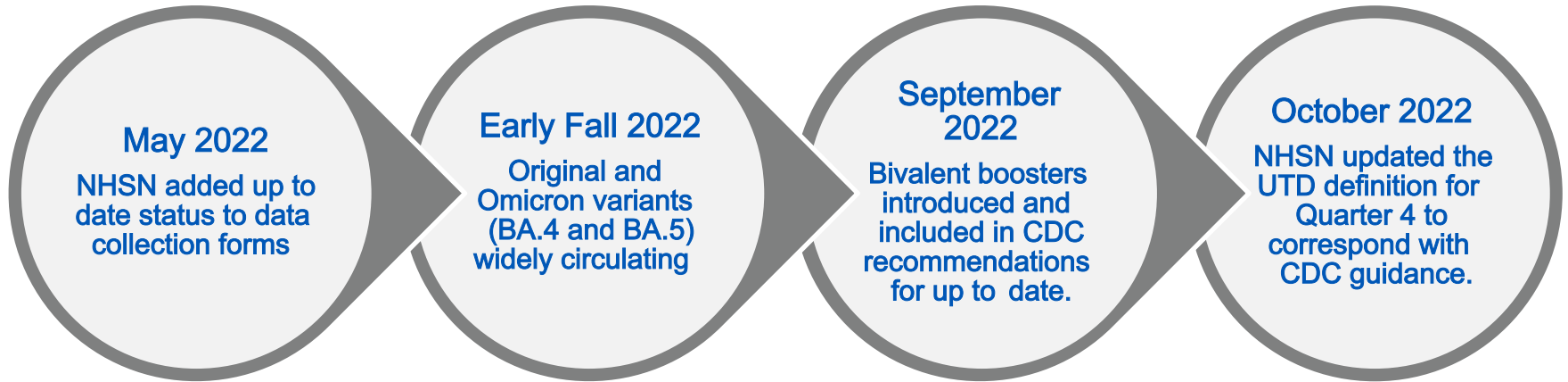
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<https://www.cdc.gov/mmwr/volumes/72/wr/mm7225a4.htm>

Background

- Nursing homes were disproportionately affected by COVID-19.
- The Centers for Medicare and Medicaid Services (CMS) required nursing homes to submit weekly aggregate COVID-19 case (beginning June 2020) and vaccination data (beginning December 2020) to NHSN.
- An early analysis of COVID-19 incidence rates showed increased risk of infection among residents who were not up to date.
- Study objective: assess the effectiveness of being up to date on preventing infection among nursing home residents.

Being Up to Date changes when new vaccines become available



During the study period, there were multiple ways to be up to date

- **During the study period NHSN's definition of up to date was:**
 - a) Received an updated (bivalent) booster dose, or**
 - b) Received their last booster dose (monovalent) less than 2 months ago, or**
 - c) Completed their primary series (monovalent) less than 2 months ago**

The Resident Impact and Facility Capacity Form added the up to date field in May 2022

- The RIFC form captures the number of COVID-19 cases among residents who are up to date 14 days before a positive SARS-CoV-2 test each week.

| Vaccination Status of Residents with a Newly Confirmed SARS-CoV-2 Viral Test Result | | |
|---|---|----------------------|
| PRIMARY SERIES: Based on the number of residents with a newly positive SARS-CoV-2 viral test result identified above. | <p>Not Vaccinated: Include residents who have not been vaccinated with a COVID-19 vaccine OR residents whose first dose was administered 13 days or less before the specimen collection date</p> | <input type="text"/> |
| | <p>Partial Vaccination: Include residents who have received Only 1-dose of a two-dose mRNA vaccine (for example, Moderna, Pfizer-BioNTech, or dose 1 of unspecified COVID-19 vaccine).</p> | <input type="text"/> |
| | <p>Complete Primary Vaccination Series: Include residents who have received Dose 1 and ~ Dose 2 of a two-dose mRNA vaccine (for example, Moderna or Pfizer-BioNTech, or dose 1 and 2 of unspecified COVID-19 vaccine) OR 1 Dose of the Janssen COVID-19 Vaccine.</p> <p>~ second dose received 14 days or more before the specimen collection date; otherwise, count as only dose 1.</p> | <input type="text"/> |
| ADDITIONAL OR BOOSTER DOSES | <p>Additional or Booster Vaccination: Include newly positive residents who have received any additional dose(s) or booster dose(s) of COVID-19 vaccine (any manufacturer) AND 14 days or more have passed before the specimen collection date.</p> <p><i>Include additional or booster dose received 14 days or more before the specimen collection date; otherwise, count as only primary series.</i></p> | <input type="text"/> |
| <p>Residents who received at least one or more booster dose of COVID-19 vaccine: Based on the number of residents with a newly positive SARS-CoV-2 viral test result identified above.</p> | | |
| BOOSTER DOSES | <p>One Booster: Include residents who have received only one booster dose of COVID-19 vaccine (any manufacturer) AND 14 days or more have passed before the specimen collection date.</p> | <input type="text"/> |
| | <p>Two or More Boosters: Include residents who have received two or more booster doses of COVID-19 vaccine since March 29, 2022 AND 14 days or more have passed before the specimen collection date.</p> | <input type="text"/> |
| <p>Up to Date: Include residents who are up to date with COVID-19 vaccines 14 days or more before the specimen collection date.</p> <p>Note: Please review the current definition of up to date: https://www.cdc.gov/nhsn/pdfs/hps/covidvax/UpToDateGuidance-May2022-508.pdf</p> | | <input type="text"/> |

The Vaccination Form added up to date in May 2022

- The vaccination form captures the cumulative number of residents who were up to date in a facility each week.

| Cumulative Vaccination Coverage | |
|---|----------------------|
| <i>Note: Facilities submit Weekly COVID-19 Vaccination Cumulative Summary data by completing the questions on this form. As of March 28th, 2022 facilities also have the option to enter data using the event-level COVID-19 vaccination form and select the "view reporting summary and submit" button? to submit these data. Using the event-level form is recommended to ensure that individuals who are up to date with COVID-19 vaccination are categorized appropriately according to their vaccination dates. Learn more here: link to QRG</i> | |
| 1. * Number of residents staying in this facility for at least 1 day during the week of data collection | <input type="text"/> |
| 2. * Cumulative number of residents in Question #1 who have received primary series COVID-19 vaccine(s) at this facility or elsewhere since December 2020: | |
| 2.1 * Only 1 dose of a two-dose Primary COVID-19 vaccine series | <input type="text"/> |
| 2.2 * Any completed Primary COVID-19 vaccine series | <input type="text"/> |
| 3. * Cumulative number of residents in Question #1 with other conditions: | |
| 3.1 * Medical contraindication to COVID-19 vaccine | <input type="text"/> |
| 3.2 * Offered but declined COVID-19 vaccine | <input type="text"/> |
| 3.3 * Unknown COVID-19 vaccination status | <input type="text"/> |
| 4. * Cumulative number of residents with complete primary series vaccine in Question #2 who have received any booster(s) or additional dose(s) of COVID-19 vaccine since August 2021 | <input type="text"/> |
| 4.1 * Cumulative number of residents in Question #4 who have received <u>only one</u> booster dose of COVID-19 vaccine since August 2021 | <input type="text"/> |
| 4.2 * Cumulative number of residents in Question #4 who received <u>two or more</u> booster doses of COVID-19 vaccine, and the most recent dose was received since March 29, 2022 | <input type="text"/> |
| 5. * Cumulative of residents in question #2 who are up to date with COVID-19 vaccines | <input type="text"/> |

Methods

- **Study period of 8 weeks between November 20, 2022 – January 8, 2023.**
 - Corresponded to fall and winter surge in cases.
 - Chose a study period with a stable definition of up to date.
 - Began the study period 2 months after the last change in definition to minimize those receiving monovalent vaccine.
- **Case data was paired with vaccination data from 2 weeks prior.**
 - Case vaccination status was classified according to the resident's vaccination status 14 days before receipt of a positive SARS-CoV-2 test.
- **A zero-inflated negative binomial mixed model was used to estimate risk ratio.**
 - adjusted for calendar week and potential confounders.
- **Vaccine effectiveness measures how well vaccines work under real-world conditions.**
 - Vaccine effectiveness was calculated as $1 - \text{rate ratio}$

Results

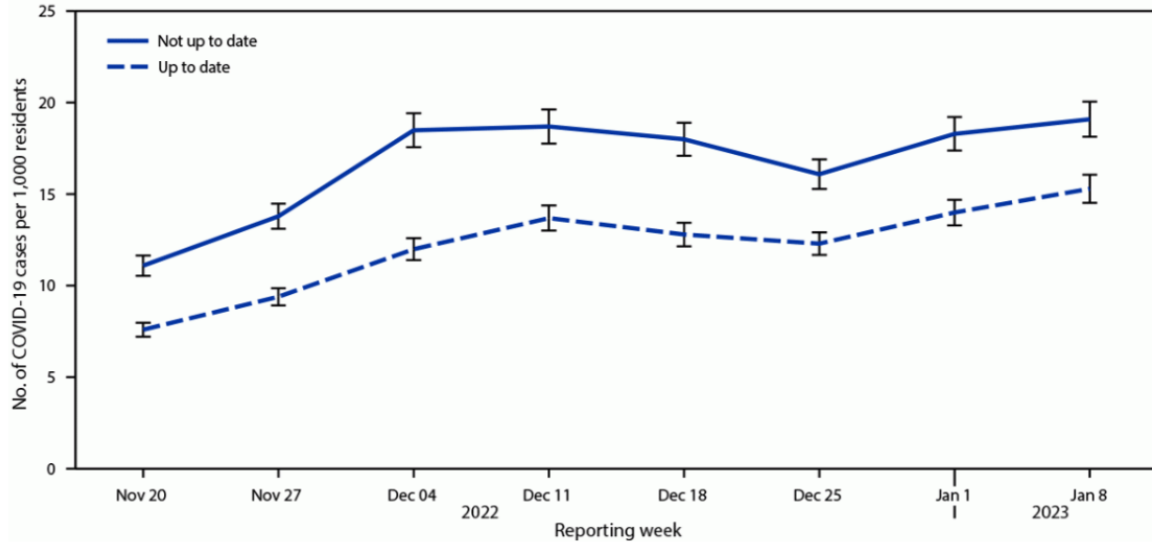
- **14,464 nursing homes were included in the analysis.**
 - These facilities reported both case and vaccination data for each week of the study period.
- **Individuals who were UTD had lower rates of infection compared to those not UTD.**
- **VE=31.2% (95% CI: 29.1%-33.2%)**
 - On average, across all facilities, residents who were up to date were 31.2% less likely to develop SARS-COV2 infection.

TABLE. Relative effectiveness of being up to date with COVID-19 vaccination in preventing SARS-CoV-2 infection among nursing home residents compared with not being up to date — National Healthcare Safety Network, United States, November 20, 2022–January 8, 2023

| Up to date* | No. of resident wks [†] | No. of cases [‡] | Crude infection rate (95% CI) [§] | RR (95% CI) ^{**} | VE (%) (95% CI) ^{††} |
|-------------|----------------------------------|---------------------------|--|---------------------------|-------------------------------|
| No | 4,648,119 | 77,240 | 16.6 (16.5–16.7) | Ref | Ref |
| Yes | 4,314,714 | 52,853 | 12.3 (12.2–12.4) | 0.69 (0.67–0.71) | 31.2 (29.1–33.2) |

In each week of the study period, individuals who were up to date had lower rates of infection compared to those who were not up to date

FIGURE. SARS-CoV-2 infections per 1,000 nursing home residents,* by up-to-date vaccination status[†] and reporting week — National Healthcare Safety Network, United States, November 20, 2022–January 8, 2023



* With 95% CIs indicated by error bars.

[†] Up-to-date vaccination status was defined as 1) ever having received a bivalent vaccine dose or 2) primary series completed <2 months earlier. The number of residents who were not up to date was calculated by subtracting the number of up-to-date residents from the total number of residents in the facility and included those who 1) received monovalent booster doses but did not receive a bivalent vaccine dose, 2) received the primary series >2 months earlier but did not receive any subsequent doses, 3) received 1 dose of the primary series, or 4) did not receive any COVID-19 vaccine doses.

Conclusion

- **Being up to date with COVID-19 vaccination recommendations, and receipt of an additional bivalent dose, provided additional protection against SARS-CoV-2 infection.**

COVID-19 Vaccination Coverage, and Rates of SARS-CoV-2 Infection and COVID-19-Associated Hospitalization Among Residents in Nursing Homes – National Healthcare Safety Network, United States, October 2023–February 2024

Weekly / April 18, 2024 / 73(15);339–344

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<https://www.cdc.gov/mmwr/volumes/73/wr/mm7315a3.htm>

Background

- Nursing home residents are at an increased risk of COVID-19 and associated hospitalization.
- In June 2023 nursing homes began reporting COVID-19-associated hospitalizations to NHSN.
- In September 2023 CDC recommended vaccination with an updated 2023-2024 COVID-19 vaccine for all persons aged 6 months or older.
- Study objective: Describe rates of COVID-19, rates of COVID-19-associated hospitalization, and vaccination coverage among nursing home residents during the 2023-2024 respiratory virus season.

Methods

- **Data collection:**

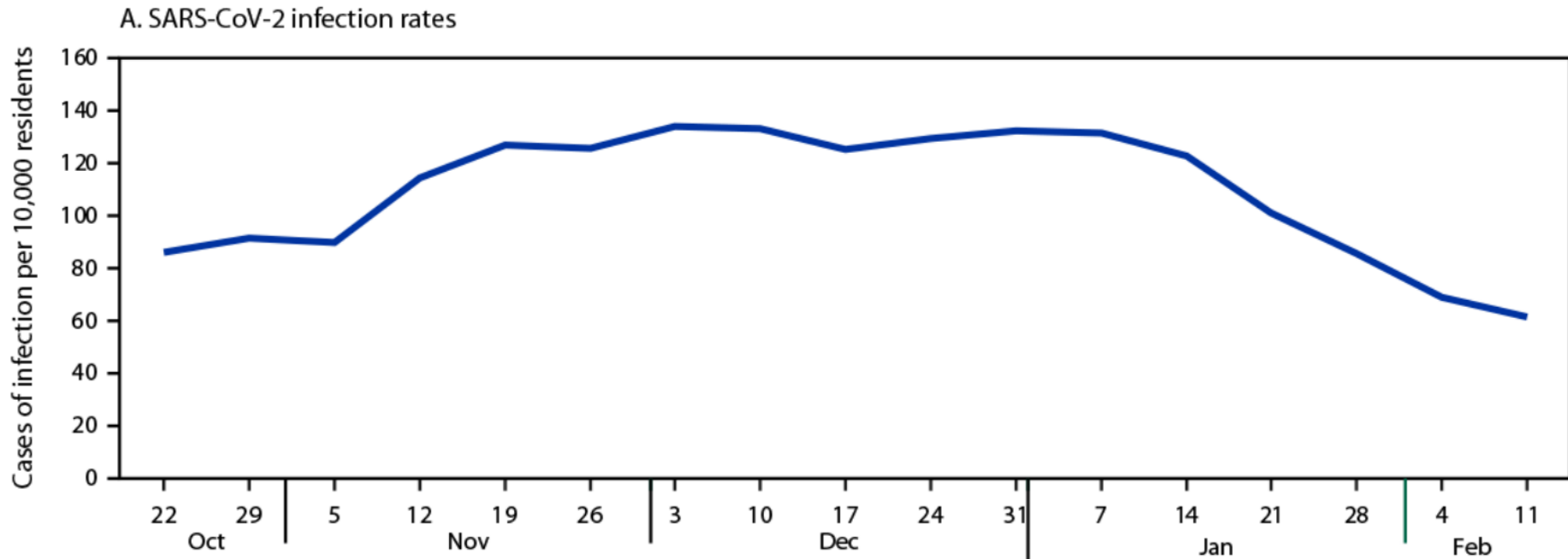
- Nursing homes reported weekly, facility-level data on COVID-19 infections, hospitalizations, and resident up-to-date vaccination coverage to NHSN.
- COVID-19-associated hospitalization: hospital admission within 10 days after lab-confirmed COVID-19 infection.
- Up-to-date status: receipt of updated 2023-2024 COVID-19 vaccine dose.

- **Data analysis:**

- Study period of October 16, 2023 – February 11, 2024.
- Weekly rates of COVID-19 and of associated hospitalization per 10,000 residents were calculated.
- Cumulative weekly rates across study period per 10,000 residents were calculated, both overall and by region.
- Weekly vaccination coverage estimates with 95% CIs were calculated.

Results

Weekly rates of COVID-19 infection ranged from 61.4 per 10,000 residents (Feb 11, 2024) to 133.8 (Dec 3, 2023). From January 2024 rates decreased each week.



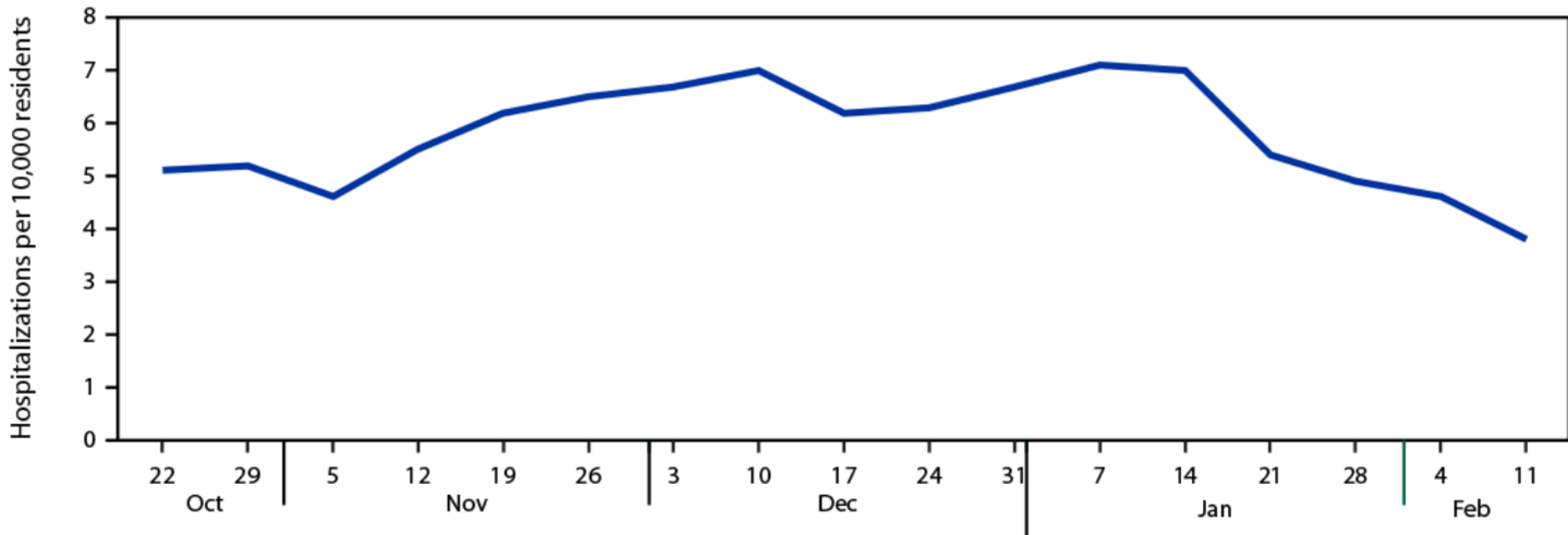
Results

- **Weekly percentage of nursing homes reporting:**
 - **≥1 COVID-19 cases ranged from 14.9% to 26.1%**
 - **≥2 COVID-19 cases ranged from 8.6% to 16.6%**
- **Cumulative weekly COVID-19 infection rate was 109.3 per 10,000 residents**
 - **Highest rate was in Midwest region (130.1)**
 - **Lowest rate was in the South (93.1)**

Results

Weekly rates of COVID-19-associated hospitalization ranged from 3.8 per 10,000 residents (Feb 11, 2024) to 7.1 (Jan 7, 2024). From January 2024 rates decreased each week.

B. COVID-19-associated hospitalization rates



Results

- **Weekly percentage of nursing homes reporting ≥ 1 COVID-19-associated hospitalization ranged from 2.6% to 4.7%**
- **Cumulative weekly COVID-19-associated hospitalization rate was 5.8 per 10,000 residents**
 - **Highest rate was in Midwest region (6.7)**
 - **Lowest rate was in the South (5.0)**

Results

- **Up to Date COVID-19 vaccination coverage increased from 16.7% to 40.5% during the study period.**
- **Vaccination coverage as of February 11, 2024, was highest in the Northeast (47.3%) and lowest in the South (32.4%)**

Implications

- **COVID-19 continued to cause morbidity among nursing home residents during 2023–2024 respiratory virus season.**
 - 14.9% – 26.1% of nursing homes reported ≥ 1 incident case of COVID-19 during each week of the study period.
 - 8.6% – 16.6% reported ≥ 2 incident cases of COVID-19 during each week of the study period.
 - Weekly COVID-19-associated hospitalizations among nursing home residents peaked at 7.1 per 10,000 residents, more than eight times the peak weekly rate of .87 per 10,000 among U.S. adults in the general population aged ≥ 70 years
- **Vaccination remained underutilized among nursing home residents (40.5% coverage as of Feb 11, 2024)**

Coverage with Influenza, Respiratory Syncytial Virus, and Updated COVID-19 Vaccines Among Nursing Home Residents – National Healthcare Safety Network, United States, December 2023

Weekly / December 22, 2023 / 72(51);1371–1376

[Print](#)

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<https://www.cdc.gov/mmwr/volumes/72/wr/mm7251a3.htm>

Background

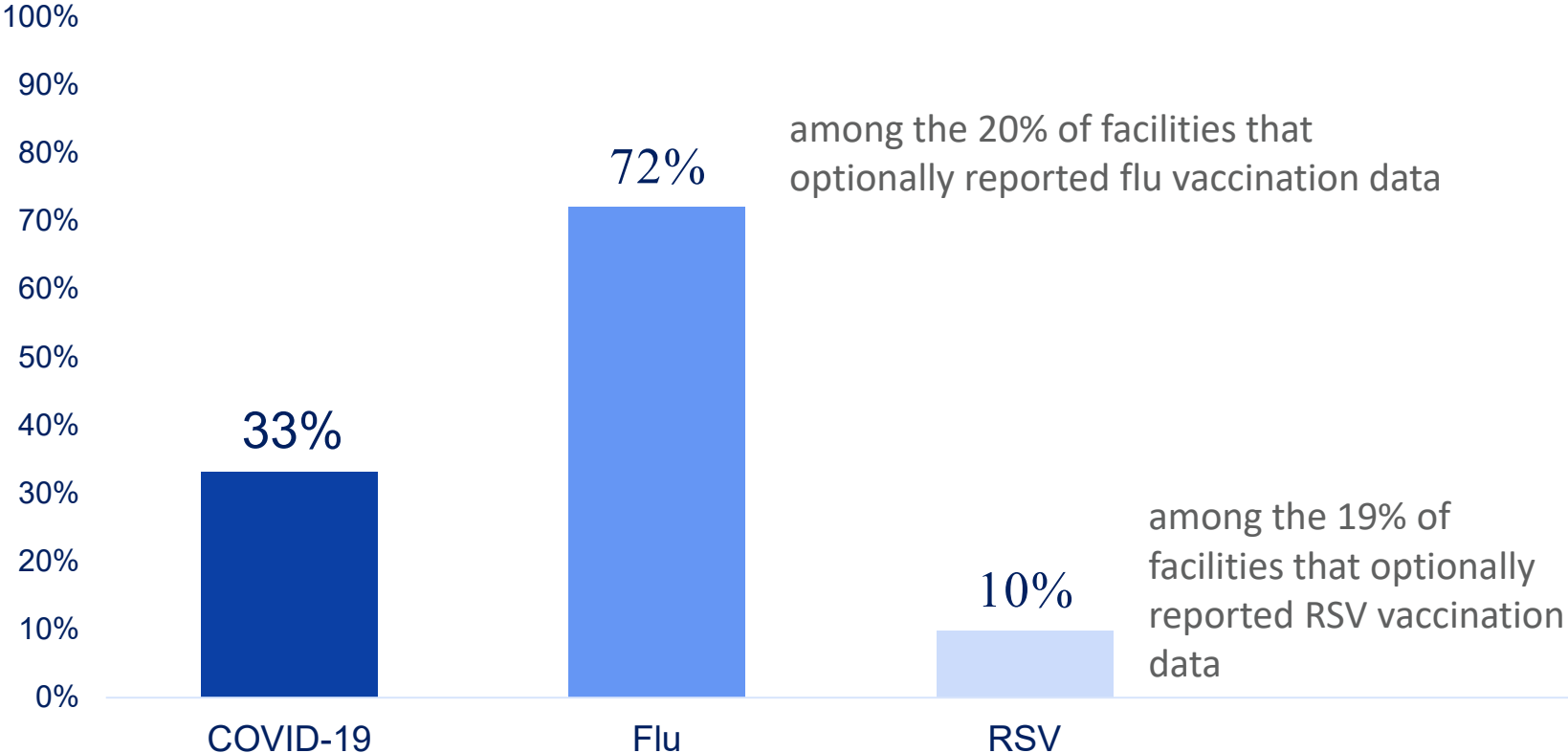
- Nursing home residents are at risk for becoming infected with and experiencing severe complications from respiratory viruses, including SARS-CoV-2, influenza (flu), and respiratory syncytial virus (RSV)
- The 2023–2024 respiratory virus season was the first in which vaccines for all 3 of these viruses (COVID-19, flu, and RSV) were available
- In October 2023, NHSN added fields for nursing homes to optionally report flu and RSV vaccination data among residents
- Study objective: Assess COVID-19, flu, and RSV vaccination coverage among nursing home residents during the 2023–2024 respiratory virus season

Methods

- **Data source: weekly, aggregate vaccination data reported by CMS-certified nursing homes in NHSN for the week of December 4–10, 2023**
- **Coverage estimates (percentage of residents vaccinated) for COVID-19, influenza, and RSV vaccine and 95% confidence intervals calculated using Poisson regression models**
 - Overall and by state, region, county-level social vulnerability index (SVI), and facility size
 - SVI considers socioeconomic status, household characteristics, race, ethnicity, housing type, and transportation. SVI is a value from 0 to 1; counties with a lower SVI value are less socially vulnerable than those with a higher SVI
 - Facility size defined by number of residents

Results

Vaccination Coverage

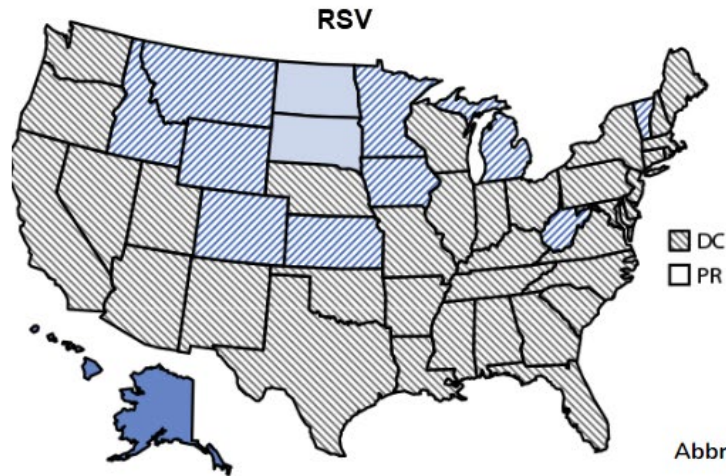
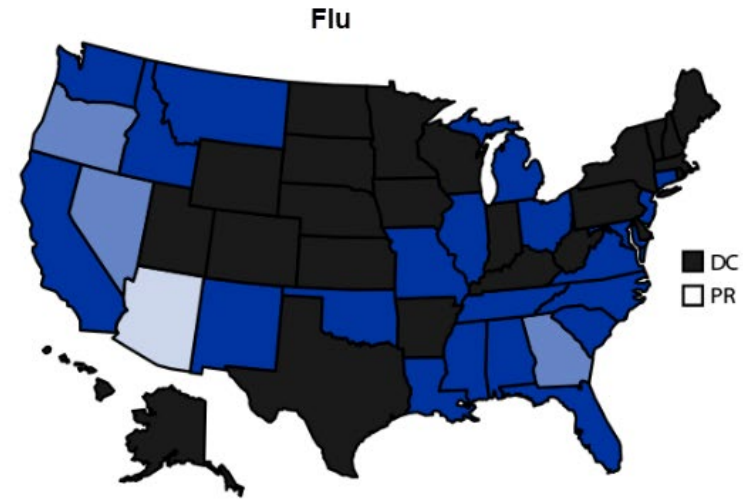
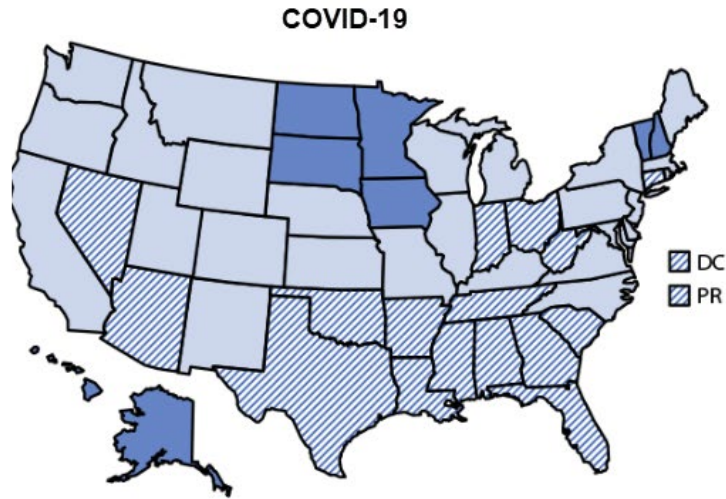


Results

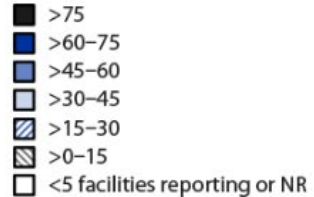
- **For all 3 vaccines:**
 - Coverage was lowest in the counties that were most socially vulnerable
 - Coverage was highest in the smallest facilities

Results

- North Dakota and South Dakota consistently reported high coverage
- Coverage generally highest in Midwest, northern plains, Northeast



Percent Vaccinated



Abbreviations: DC = District of Columbia; NR = not reported; PR = Puerto Rico

Implications

- **Coverage low, especially COVID-19 and RSV**
 - Compared to general population of older adults:
 - COVID-19 coverage among residents was lower
 - RSV coverage among residents was lower
 - Flu coverage among residents was slightly higher
- **Reasons for low vaccination coverage among residents**
 - Vaccine fatigue
 - Billing and payment barriers
 - RSV: new vaccine, recommendation based on shared clinical decision-making, less awareness of the risk for RSV outbreaks and severe disease among residents

Implications

- **Highest coverage in small nursing homes**
 - Providers in small facilities might be best able to build trust with residents and families and mitigate barriers
- **Highest coverage in North Dakota and South Dakota**
 - Achieved high coverage through robust relationships and frequent, persistent, clear communication among nursing homes, health care systems, state and local health departments, and pharmacies
- **CDC efforts to increase vaccination coverage among residents**
 - Sharing data with state and local health departments and CMS Quality Innovation Networks-Quality Improvement Organizations (QIN-QIOs) to guide targeted outreach and educational efforts in nursing homes with lower coverage
 - Promoting successful strategies employed by facilities with higher coverage
 - Working with partners to respond to barriers

Conclusions

- There is an urgent need to protect nursing home residents against severe outcomes of respiratory illnesses by increasing vaccination against COVID-19, influenza, and RSV
- Health care providers should counsel residents that immunizations are the most effective way to prevent severe outcomes from COVID-19, influenza, and RSV and offer recommended immunizations

Media Coverage: 63 news stories



NEWS

HHS chief returns focus of low COVID-19 vax rates to nursing homes

JAMES M. BERKLAN
x @JIMBERKLAN

JANUARY 4, 2024

Tampa Bay Times

NEWS / HEALTH

Florida has low rate of nursing home residents getting new COVID shot

Dozens of facility residents have died from the virus in recent weeks.

The Washington Post
Democracy Dies in Darkness

Opinion | What government can do about dismal nursing home vaccination rates



By [Leana S. Wen](#)
Contributing columnist | + Follow

December 27, 2023 at 6:15 a.m. EST

yahoo!news

CDC encourages seniors to get vaccination against flu, COVID-19, RSV

The Robesonian, Lumberton, N.C.
December 27, 2023 · 2 min read

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Many U.S. Nursing Home Residents Have Not Been Vaccinated for Flu, COVID-19, or RSV for 2023-24

DEC 22, 2023

Questions?

Thank You

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 [cdc.gov](https://www.cdc.gov)

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