In January 2023, compared to adults ages 18 years and older who received an updated COVID-19 bivalent booster dose, monthly rates of COVID-19-associated hospitalizations were **10.9x Higher in Unvaccinated** and **1.5x Higher in Vaccinated Adults without an updated booster.***

Reset Filters

View

Age-Adjusted Rates

Filters

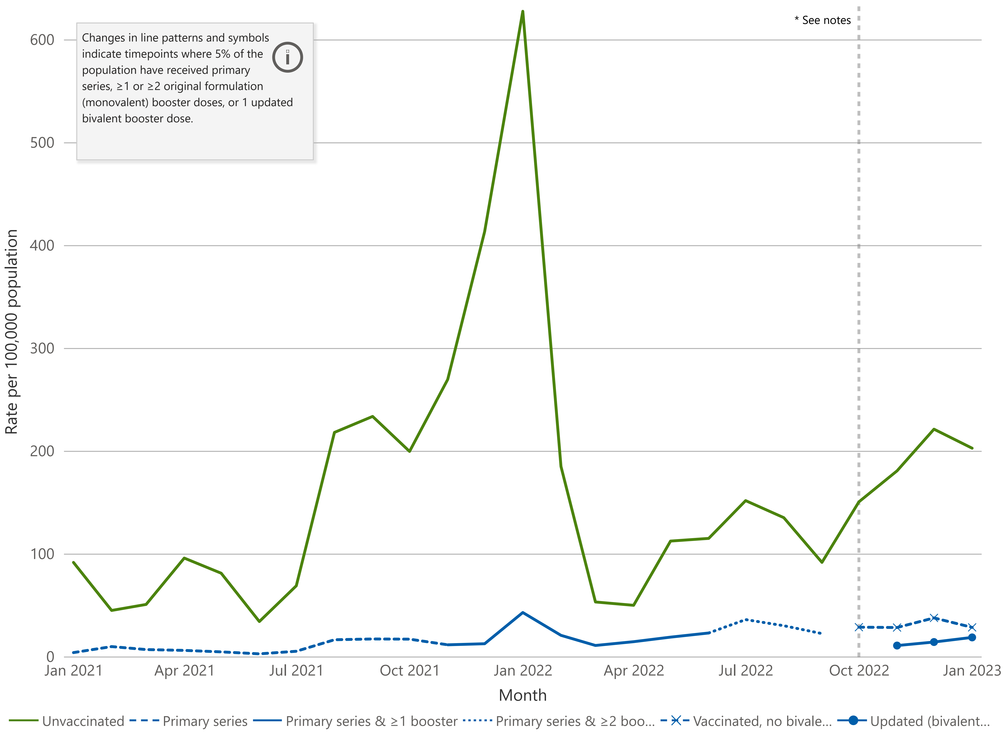
Season: All

Vaccine Status: All

Age Group: ≥18 Years

Monthly Age-Adjusted Rates of COVID-19-Associated Hospitalization by Vaccination Status

in Patients Ages ≥18 Years January 2021 - January 2023



These data were posted on March 15, 2023, and reflect hospitalizations through January 2023.

*Notes: Data are presented for the first complete month when 14 days passed since at least 5% of adults 18+ among the population of the COVID-NET surveillance catchment area have received an updated (bivalent) COVID-19 booster dose. Refer to Footnotes for additional details.

CDC Download Data

Footnotes

Rate Ratios: Rate ratios compare the rate of COVID-19-associated hospitalizations among persons who received an updated (bivalent) COVID-19 booster dose compared to those who (a) remain unvaccinated or (b) completed a primary series or primary series plus ≥1 or ≥2 additional or booster doses of original (monovalent) formulation but received no updated (bivalent) booster ≥14 days prior to a positive SARS-CoV-2 test date that resulted in hospitalization. Rate ratios are based on person-time by vaccination status for each individual month. Person-time is a measure that takes into account changing numbers of persons who received the bivalent booster dose in the population over time.

The period of data presented after the changed in line pattern is based on the first complete month when 14 days passed since at least 5% of the age group-specific population of the COVID-NET surveillance catchment area have received a primary series, ≥1 or ≥2 original formulation (monovalent) booster doses, or 1 updated bivalent booster dose. Individuals who only received a primary series, but no additional or booster doses, are not included with those who received a primary series plus ≥1 or ≥2 additional or booster doses. Only those persons who received an updated bivalent booster doses are included in that category, regardless of receipt of primary series or additional or booster doses (of monovalent vaccine).

Defining Vaccination Status among Hospitalized Persons

Primary COVID-19 vaccination series: Receipt of the second dose of a two-dose vaccine series or one dose of a single dose vaccine with a positive SARS-CoV-2 test performed ≥14 days after either the second dose of a two-dose series or after one dose of a single dose vaccine.

Primary series with ≥1 additional or booster dose: Receipt of a primary vaccination series and ≥1 additional or booster dose on or after August 13, 2021, with a positive SARS-CoV-2 test performed ≥14 days after receipt of at least one additional or booster dose.

Primary series with ≥2 additional or booster doses: Receipt of a primary vaccination series and ≥2 additional or booster doses on or after August 13, 2021, with a positive SARS-CoV-2 test performed ≥14 days after receipt of at least one additional or booster dose.

- As vaccination recommendations change, a person is considered up to date if they have received the primary series and all recommended additional or booster doses. Because the immune status of all cases is not known, an additional dose (recommended for persons with a weakened immune system) cannot be distinguished from a booster dose.
- These data link each person's primary and additional or booster doses. However, linking is sometimes not possible. Unlinked dose data results in over-estimates of first doses and under-estimates of subsequent doses, which may affect hospitalization rates by vaccination status category.

Vaccinated, no bivalent booter: Receipt of a primary vaccination series with or without the receipt of any additional or booster doses of original (monovalent) formulation but received no updated (bivalent) booster and received a positive SARS-CoV-2 test result from a test performed both (a) ≥14 days after receipt of their most recent COVID-19 vaccination and (b) during or ≤14 days before hospital admission.

Bivalent booster: Receipt of the updated bivalent COVID-19 vaccine booster dose and received a positive SARS-CoV-2 test result from a test performed both (a) ≥14 days after receipt of the updated (bivalent) COVID-19 booster dose administered on or after September 1, 2022 (if eligible) and (b) during or ≤14 days before hospital admission. An updated (bivalent) booster dose is recommended after completion a primary COVID-19 vaccination series. For purposes of these data, persons who received an updated (bivalent) booster dose are assumed to have received a primary series, but this may not always be the case and a small number of persons might have received an updated (bivalent) booster dose without receiving a primary series.

Unvaccinated: Persons with a positive SARS-CoV-2 test who have no record of receiving any COVID-19 vaccine doses.

Partially vaccinated: Persons who received at least one FDA-authorized vaccine dose but did not complete a primary series ≥14 days before a positive SARS-CoV-2 test were excluded from all data shown.

Recommendations for booster and additional doses of COVID-19 vaccine change over time. Additional information on booster-related policy changes can be found here: September 24, 2021: CDC recommends a Pfizer-BioNTech booster dose for adults ages ≥65 years and people in certain populations and high risk occupational and institutional setting; October 21, 2021: CDC recommends a booster dose for adults ages ≥18 years who received Janssen vaccine and for Pfizer or Moderna recipients ages ≥65 years or in certain populations and high risk occupational and institutional settings; November 19, 2021: CDC expands recommendation for booster doses to include all adults ages ≥18 years; December 9, 2021: CDC expands recommendation for booster doses to include adolescents ages 16–17 years; January 5, 2022: CDC expands recommendation for booster doses to include all adolescents ages 12–17 years; March 29, 2022: CDC recommends a 2nd booster dose in adults ages ≥50 years and immunocompromised individuals; May 19, 2022: CDC expands recommendation for booster doses to include children ages 5–11 years; September 1, 2022: CDC recommends updated COVID-19 boosters from Pfizer-BioNTech for people ages ≥12 years and from Moderna for people ages ≥18 years; October 12, 2022: CDC expands recommendation for updated COVID-19 vaccines to include children ages 5-11 years.

Data Sources and Methods

Participating COVID-NET sites: COVID-19 vaccination data from COVID-NET catchment areas in California, Colorado, Connecticut, Georgia, Maryland, Michigan, Minnesota, New Mexico, New York, Ohio, Oregon, Tennessee, and Utah are included.

Vaccination data: COVID-NET sites, through agreements with state health departments and other partners, collect COVID-19 vaccination information on COVID-19-associated hospitalizations through state-based vaccine registries. When possible, sites collect COVID-19 vaccination status on all COVID-19 cases who are hospitalized, including the number of vaccine doses received, the vaccine product, and date(s) of vaccination administration (numerator data). Some COVID-NET sites collect vaccination data on only a subsample of cases; for those sites, data on vaccination status are statistically weighted to account for non-response and the probability of being selected as a sampled case.

State-based immunization information systems (IIS) data provide the number of residents within defined geographic areas who have received one or more doses of COVID-19 vaccine every week (denominator data). These data are used to define the number of people in a geographic area who received their primary vaccination series, a booster or additional dose status, or are unvaccinated, based on the number of doses received, the vaccine product, and date(s) of administration. The numbers of unvaccinated and vaccinated people in the COVID-NET surveillance denominator change every week as more people are vaccinated. Vaccination records missing county of residence (or state of residence for Maryland) are not included.

Continuity correction: A continuity correction has been applied to the denominators by capping the percent population vaccination coverage at 95%. To do this, we assumed that at least 5% of each age group would always be unvaccinated in each jurisdiction. Adding this correction ensures that there is always a reasonable denominator for the unvaccinated population that would prevent hospitalization rates from growing unrealistically large due to potential overestimates of vaccination coverage.

Data Reporting: The Coronavirus Disease 2019 (COVID-19)-Associated Hospitalization Surveillance Network (COVID-NET) hospitalization data are preliminary and subject to change as more data become available. In particular, rates for recent hospital admissions are subject to lag. Lag for COVID-NET case identification and reporting might increase around holidays or during periods of increased hospital utilization.