

2022–2023 Respiratory Syncytial Virus (RSV) Hospitalization Report



Oregon Emerging Infections Program
Acute and Communicable Disease Prevention
Oregon Public Health Division

Background

Since 2016, the Oregon Emerging Infections Program (EIP) has conducted surveillance for adult Respiratory Syncytial Virus (RSV) hospitalizations in collaboration with the Centers for Disease Control and Prevention (CDC) RSV-Associated Hospitalization Surveillance Network (RSV-NET). Surveillance for pediatric RSV-associated hospitalizations was added in 2018.

The objectives of EIP RSV-NET surveillance are:

- To estimate age-, race-, and ethnicity-specific hospitalization rates
- To describe temporal trends of laboratory-confirmed RSV hospitalization
- To describe characteristics of persons hospitalized with RSV
- To describe clinical features and the course of RSV disease among persons hospitalized with RSV

In Oregon, the EIP surveillance area for RSV hospitalizations comprises the Portland tri-county area (Clackamas, Multnomah, and Washington counties) with its 2020 population of 1,840,747,¹ which is approximately 43% of the population of Oregon.

This report summarizes RSV-NET surveillance in Oregon during the 2022–2023 season (October 1, 2022 – April 30, 2023).

Methods

Cases are defined as laboratory-confirmed RSV hospitalizations among residents of the EIP surveillance area who test positive for RSV within 14 days before admission or 3 days after admission. Cases are reported by hospitals in the tri-county area. Medical

1. National Center for Health Statistics. Vintage 2020 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010–July 1, 2020), by year, county, single-year of age (0, 1, 2, ..., 85 years and over), bridged race, Hispanic origin, and sex. Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: [/nchs/nvss/bridged_race.htm](https://www.census.gov/data/tables/2020/nchs/nvss/bridged_race.htm) as of September 22, 2021, following release by the U.S. Census Bureau of the unbridged Vintage 2020 postcensal estimates by 5-year age group on June 17, 2021.

records are reviewed by trained personnel, who use the EIP case-report form to collect standardized data regarding demographic characteristics, clinical manifestations, underlying conditions, and outcomes.

Surveillance results

During October 1, 2022–April 30, 2023, 664 RSV-related hospitalizations were reported in Oregon’s EIP surveillance area—306 adult (≥18 years) cases and 358 pediatric (<18 years) cases. This represents a crude rate of 36.8 cases per 100,000 residents.

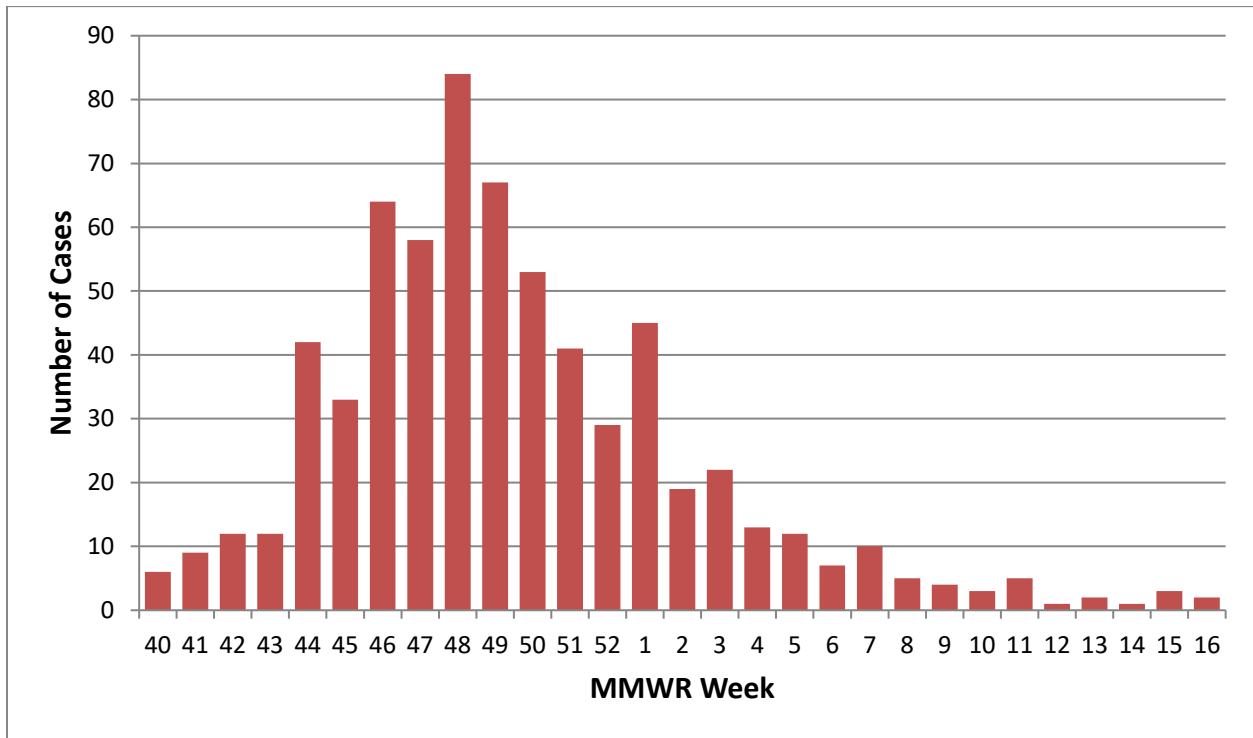
Table 1 shows the sex, age, ethnicity, and race of Oregon EIP RSV-NET cases in the 2022–2023 season. The median age of hospitalized cases was 5 years (range, 10 days–98 years). Approximately half of cases were under 5 years of age, 51.8% of cases were male, and 61.9% of cases identified as Non-Hispanic White.

Table 1. Characteristics of Oregon EIP RSV-NET cases, 2022–2023.

Case Characteristics	No. n=664	Percent
Sex		
Male	344	51.8
Female	320	48.2
Age		
<6 months	139	20.9
6–23 months	117	17.6
24–59 months	72	10.8
5–10 years	25	3.8
11–17 years	5	0.8
18–49 years	58	8.7
50–64 years	59	8.9
> 64 years	189	28.5
Race/Ethnicity		
Hispanic	90	13.6
White, Non-Hispanic	411	61.9
Black, Non-Hispanic	43	6.5
Asian/Hawaiian or Pacific Islander	36	5.4
American Indian/Alaska Native	4	0.6
Multiple Races	20	3.0
Unknown	60	9.0

Figure 1 shows the distribution of the 664 cases during the RSV season. The peak of RSV-associated hospitalizations (84) occurred during MMWR week 48 of 2022 (November 27–December 3). The first case was reported during week 40 (October 2–8, 2022), and the last case was reported during week 16 (April 16–22, 2023).

Figure 1. Number of Oregon EIP RSV-NET cases by MMWR week, 2022–2023.



Two hundred nineteen (33%) of 664 cases, including 86 pediatric and 133 adult cases, were sampled for medical-record review. Eighteen of 20 pregnant cases (all adults) were sampled.

Table 2 shows selected outcomes and underlying medical conditions for pediatric cases. Among sampled pediatric cases, 28.8% had an underlying medical condition. The most frequently reported underlying medical conditions among pediatric cases were neurologic disorder (13.0%) and chronic lung disease (12.3%).

Table 2. Selected outcomes and underlying medical conditions for sampled pediatric Oregon EIP RSV-NET cases, 2022–2023.

Outcomes and underlying medical conditions*	No. (n=86)	Weighted Percent^o
Mechanical ventilation	5	2.6
ICU	14	14.6
Any underlying medical condition**	34	28.8
Condition		
Obese***	2	0.8
Cardiovascular disease	2	0.8
Chronic metabolic disease	2	0.8
Chronic lung disease	10	12.3
Asthma	9	4.1
Renal disease	2	2.5
Neurologic disorder	9	13.0
Immunosuppressive condition	5	1.9
Hemoglobinopathy	1	0.5
Seizure disorder	2	0.6
Cancer	4	1.4
Cognitive dysfunction	0	0.0
Pregnant	0	0.0
History of Guillain-Barre Syndrome	0	0.0

*Unknown values not shown.

^o Data are reported as raw counts among sampled cases with weighted percents calculated based on sampling scheme.

**Cases may have more than one underlying condition; categories are not mutually exclusive.

***Obesity among children aged 2 years and older defined as body mass index (BMI) ≥ 30 , calculated using height and weight if known; otherwise, as indicated in medical record.

Table 3 shows selected outcomes and underlying medical conditions for adult cases. Ninety percent of adult cases had at least one underlying medical condition prior to admission. The most frequently reported underlying medical conditions among adults were cardiovascular disease (60.7%) and chronic lung disease (51.1%).

Table 3. Selected outcomes and underlying medical conditions for sampled adult Oregon EIP RSV-NET cases, 2022–2023.

Outcomes and underlying medical conditions*	No. (n=133)	Weighted Percent^o
Mechanical ventilation	10	4.3
ICU	21	16.7
Any Underlying Medical Condition**	123	90.0
Condition		
Obese***	46	32.5
Cardiovascular disease	73	60.7
Chronic metabolic disease	53	36.7
Chronic lung disease	72	51.1
Asthma	33	19.1
Renal disease	25	24.3
Neurologic disorder	31	18.9
Immunosuppressive condition	12	11.5
Hemoglobinopathy	8	3.6
Seizure disorder	4	4.5
Cancer	8	8.7
Cognitive dysfunction	2	3.1
Pregnant†	18	52.9
History of Guillain-Barre Syndrome	0	0.0

*Unknown values not shown.

^o Data are reported as raw counts among sampled cases and weighted percents calculated based on sampling scheme.

**Cases may have more than one underlying condition; categories are not mutually exclusive.

***Obesity defined as body mass index (BMI) ≥ 30 , calculated using height and weight if known; otherwise, as indicated in medical record. BMI was not calculated for pregnant cases.

†Total number of females 18–49 years of age (n=33).

Among all individuals hospitalized for RSV during the 2022–2023 season, 17 (2.6%) died during their hospitalization. All deaths were among adults (5.6% of all RSV-associated adult hospitalizations).

Figure 2 displays rates of RSV-associated hospitalizations by age group and season, 2019–2023. During the 2022–2023 season, the highest rate of hospitalization occurred among persons 0–4 years of age, at 353.4 cases per 100,000 population, followed by persons 65 years and older, at 68.2 cases per 100,000 population. The overall RSV hospitalization rate for the 2022–2023 season was 36.8 cases per 100,000 population.

Figure 2. Rates of Oregon EIP RSV-associated hospitalizations by age group and year, 2019–2023.

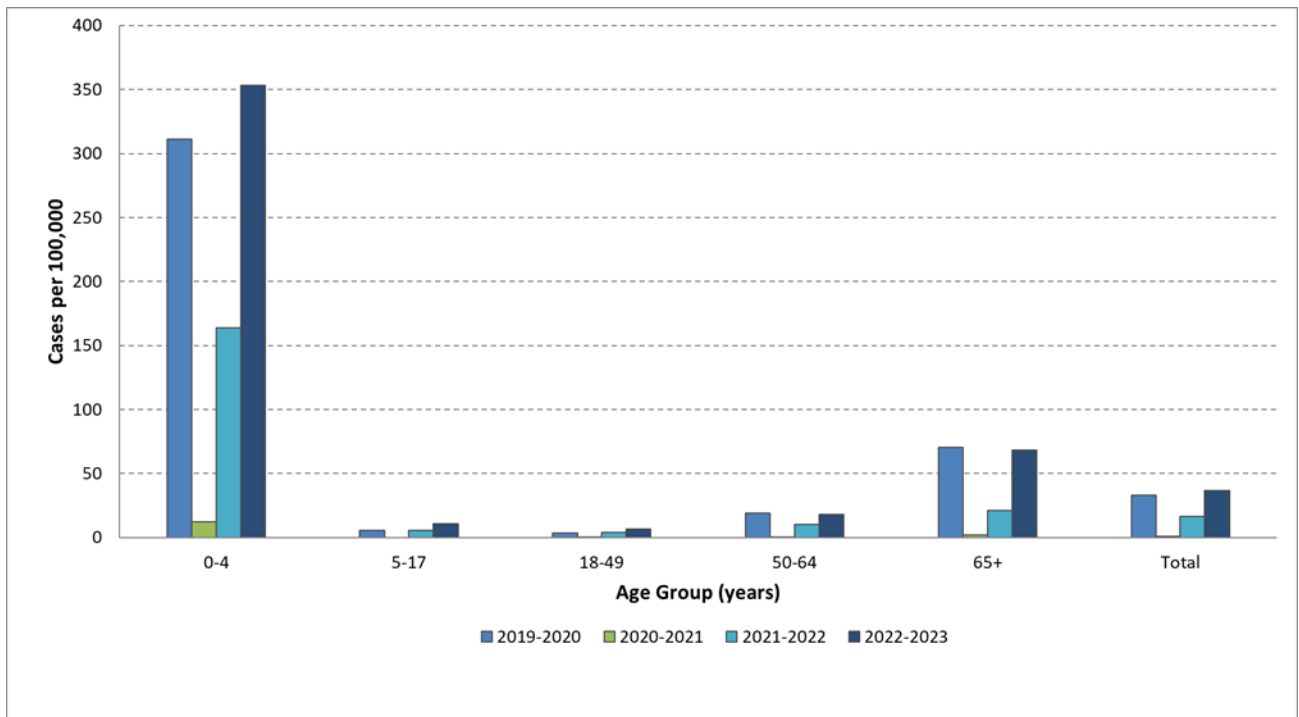
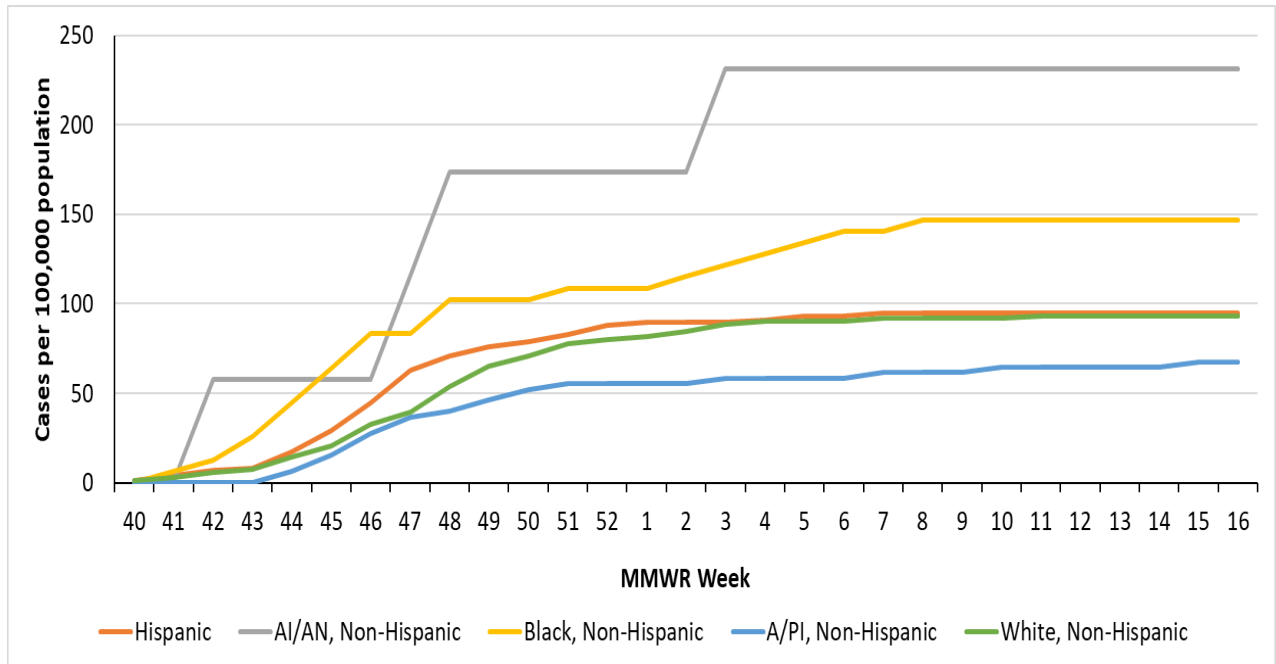


Figure 3 shows cumulative rates of RSV-associated hospitalizations by race and ethnicity for pediatric cases during the 2022–2023 season; the highest rate occurred among the Non-Hispanic American Indian/Alaska Native pediatric population, at 231 cases per 100,000, followed by Non-Hispanic Blacks, at 147 cases per 100,000.

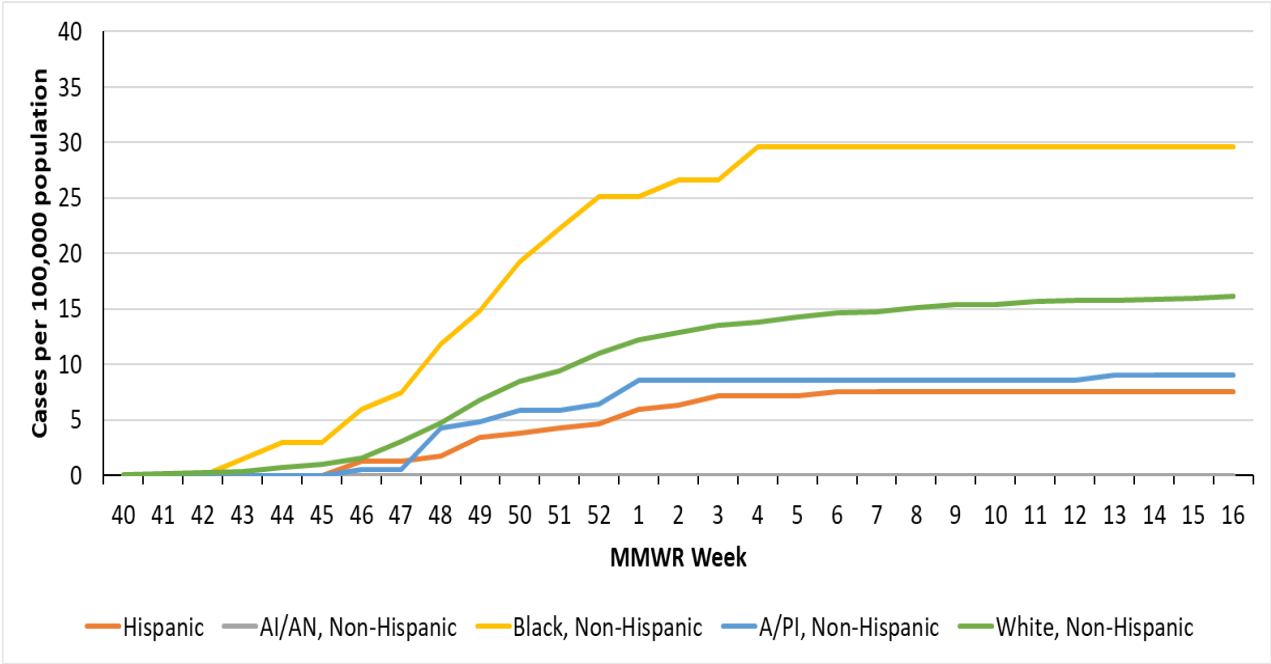
Figure 3. Cumulative rates of Oregon EIP RSV-associated hospitalizations by race and ethnicity among children, 2022–2023.



Abbreviations: A/PI: Asian/Pacific Islander; AI/AN: American Indian/Alaska Native

Figure 4 displays age-adjusted cumulative rates of RSV-associated hospitalization by race and ethnicity among adults during the 2022–2023 season. The highest rate occurred among Non-Hispanic Black adults, at 30 cases per 100,000.

Figure 4. Age-adjusted cumulative rates of Oregon EIP RSV-associated hospitalizations by race and ethnicity among adults, 2022–2023.



Abbreviations: A/PI: Asian/Pacific Islander; AI/AN: American Indian/Alaska Native