

Vaccine-Preventable Diseases Surveillance Summary, 2023

Wisconsin Immunization Program

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Introduction

Wisconsin's Immunization Program is responsible for collecting surveillance data on vaccine-preventable diseases (VPDs) for the purposes of determining disease impact, assessing trends in disease occurrence, characterizing affected populations, prioritizing control efforts, and evaluating prevention strategies in Wisconsin.

Wisconsin state statute § 252.05 and Wisconsin Administration Code chapter DHS 145 requires healthcare providers and laboratories to report specified <u>communicable</u> <u>diseases</u> and conditions to the local health officer electronically or by mail or fax within 24 to 72 hours after identification of a known or suspected case among Wisconsin residents.

This report summarizes information on select VPDs among Wisconsin residents reported to the Wisconsin Department of Health Services (DHS) through the Wisconsin Electronic Disease Surveillance System (WEDSS).

Vaccines are one of the best ways to protect the health of our community. Before vaccines, many people died from diseases we now can prevent. However, routine

vaccination rates have declined in recent years due to a variety of factors, including the COVID-19 pandemic. During the pandemic, many children and adolescents fell behind schedule for routine vaccines, leaving our communities vulnerable to VPDs.



The viruses and bacteria that cause these VPDs still exist and can still cause serious illnesses or even death. It is critically important for everyone to get the vaccines they need on time to stay healthy and keep our communities safe from VPDs.

Diphtheria Wisconsin, 2023

Diphtheria is a serious and contagious infection that can be spread from person to person through airborne droplets. Less commonly, diphtheria can spread through surfaces that have the bacteria on it. The bacteria make a toxin, or poison, that kills healthy tissues in the respiratory system. Within two to three days, the dead tissue forms a thick, gray coating that can build up in the throat or nose. This gray coating can cover tissues in the nose, tonsils, voice box, and throat, making it hard to breathe and swallow. If the toxin gets into your blood stream, it can damage the heart, nerves, and kidneys.

Infection is rare in the United States but continues to occur in many developing countries in Asia, the Middle East, Eastern Europe, Haiti, and the Dominican Republic. Travelers to these areas are at risk of diphtheria infection. It is important to prevent diphtheria because diphtheria can cause <u>serious</u> <u>complications</u>, including death. Vaccination with diphtheria vaccine is the most effective method for preventing diphtheria.

2023 Data

During 2023, no diphtheria cases were reported among Wisconsin residents. The last case of diptheria among Wisconsinites was in 1979.

Trends

Figure 1. After use of diphtheria vaccine became routine and widespread during the late 1940s, the number of diphtheria cases decreased substantially in Wisconsin and in the United States. Number of reported confirmed diphtheria cases, by year, Wisconsin, 1943–2023



Measles Wisconsin, 2023

Although measles is now relatively rare in Wisconsin, it is still common in many parts of the world and is becoming more prevalent in the United States. As of May 16, 2024, a total of <u>139 measles cases</u> were reported in the United States by 21 state or city health departments and 70% of those cases were outbreak-associated. Additionally, 82% were unvaccinated or had an unknown vaccination status, 13% had received one measles, mumps, and rubella (MMR) dose, and 6% had received two MMR doses. It is important to prevent measles because it spreads quickly among unvaccinated people and can cause <u>serious illness and complications</u>, especially for children. For example, of the 75 US cases hospitalized so far in 2024, 63% (40 of 63) were under the age of 5 years. The MMR vaccine is the most effective method for preventing measles.

2023 Data



Figure 2. During 2023, there was one measles case reported in a Wisconsin resident.

Number of reported confirmed measles cases, by year, in Wisconsin, 2014–2023

Trends

Figure 3. Measles cases in Wisconsin have decreased substantially since the measles vaccine was introduced in 1963.

Number of reported confirmed measles cases, by year, in Wisconsin, 1950-2023



Meningococcal Disease Wisconsin, 2023

Meningococcal disease is a rare but serious bacterial infection that often leads to severe illness or death. Those at highest risk are infants, preteens, teens, and young adults. College students are particularly susceptible, as they are more likely to engage in activities in which there is direct contact with oral secretions. Meningococcal disease occurs worldwide, with cases circulating widely in Sub-Saharan Africa. Unvaccinated travelers to this region are at increased risk of meningococcal disease. Vaccination with Meningococcal vaccine prevents meningococcal disease, its <u>serious complications</u>, and reduces transmission to other countries.

2023 Data

Figure 4. In 2023, one case of meningococcal disease was reported in a Wisconsin resident. Number of reported confirmed meningococcal disease (all serogroups) cases, by year, Wisconsin, 2018–2023



Trends

Figure 5. After the meningococcal conjugate (serogroups ACWY) and serogroup B meningococcal vaccines were introduced in 2005 and 2014, respectively, the number of meningococcal cases has decreased steadily in Wisconsin and in the United States. In 2010, a second dose of meningococcal conjugate vaccine was routinely recommended, and cases have declined even further.

Number of reported confirmed meningococcal disease (all serogroups) cases, by year, Wisconsin, 1990–2023



Mumps Wisconsin, 2023

Cases and outbreaks of mumps continue to occur in Wisconsin and the United States, often among young adults in close-contact settings. It is important to prevent mumps because it can cause <u>serious</u> <u>complications</u>, especially among adults. The MMR vaccine prevents most mumps cases and complications.

2023 Data

Figure 6. During 2023, there were no mumps cases reported among Wisconsin residents. Number of reported confirmed mumps cases, by year, in Wisconsin, 2014–2023



Trends

Figure 7. After the live attenuated mumps vaccine was introduced in 1967, cases decreased greatly in Wisconsin and in the United States; however, cases and outbreaks still occur. Number of reported confirmed mumps cases, by year, in Wisconsin, 1940–2023



Pertussis Wisconsin, 2023

Pertussis continues to affect people of all ages in Wisconsin and the United States. Large and small outbreaks continue to occur. Infants too young to be fully vaccinated are at highest risk of pertussis and its <u>serious complications</u>, including death. Routine vaccination with pertussis vaccine is the most effective method for preventing pertussis. Newborn infants are best protected from pertussis when their birthing parent is vaccinated with Tdap vaccine during the third trimester of pregnancy. These infants are born with passive protection from pertussis.

2023 Data

People with pertussis ranged in age from less than 1 year to 86 years (median: 9 years). Two (4%) cases were hospitalized. Among cases aged less than 1 through 10 years, 41% were up to date with pertussis vaccinations, and 45% of cases aged 11–18 years had received the Tdap booster dose.

Figure 8. During 2023, 47 confirmed and 4 probable pertussis cases were reported among Wisconsin residents in 23 counties.



Number of reported confirmed and probable pertussis cases, by year, Wisconsin, 2012-2023

Trends

During the 1990s, a new diagnostic test (PCR) was introduced that allowed more pertussis cases to be detected and reported. Also, during the 1990s, whole cell vaccine was replaced by acellular pertussis vaccine (DTaP). Recent studies indicate DTaP provides a shorter duration of protection from pertussis than whole cell vaccine. A booster acellular pertussis vaccine, Tdap, was introduced in 2006.

Figure 9. After whole cell pertussis vaccine was introduced during the 1940s, the number of cases decreased in Wisconsin and in the United States.

Number of reported confirmed and probable pertussis cases, by year, Wisconsin, 1938–2023



Polio Wisconsin, 2023

Polio is a life-threatening disease caused by poliovirus. The virus is very contagious and spreads easily from person to person through the fecal oral route. This means the virus is swallowed and then multiplies in the intestine. Someone who is infectious with polio can spread the disease to others before they develop symptoms and up to two weeks after symptoms appear. Polio affects the nervous system and causes muscle weakness. About 25% of people infected with polio will have flu-like symptoms. In some cases, polio can cause paralysis or death.

Health officials from around the globe have been working intently to eradicate polio. Only a few countries remain where polio cases continue to occur, but travelers can and have spread polio to other previously polio-free countries. Travelers to affected areas, including some parts of Africa and Asia, are at risk for polio. Vaccination with polio vaccine prevents polio, its serious complications and reduces polio transmission to other countries.

2023 Data

During 2023, no polio cases were reported among Wisconsin residents. The last case of polio among Wisconsinites was in 1979.

Trends

Figure 10. After the first polio vaccine was introduced in 1955, the number of polio cases decreased greatly in Wisconsin and in the United States.

Number of reported confirmed polio cases, by year, Wisconsin, 1950-2023



Rubella Wisconsin, 2023

Rubella is no longer constantly present in the United States. However, because rubella is still common in many parts of the world, including Southeast Asia, Africa, and the Eastern Mediterranean region, travelers to affected areas can bring rubella to the United States and Wisconsin. For example, in 2012 a Wisconsin resident developed rubella after having contact with family members who recently arrived from an affected country. Rubella can cause <u>serious complications</u> and people who are infected with rubella during pregnancy are at risk for miscarriage, stillbirth, and of having a baby with severe birth defects, a condition known as <u>congenital rubella syndrome</u>. Vaccination with rubella vaccine is the most effective method for preventing rubella. To prevent congenital rubella syndrome, people should be vaccinated with MMR vaccine before they become pregnant.

2023 Data

Figure 11. During 2023, no rubella cases were reported among Wisconsin residents. The last rubella case among a Wisconsin resident was in 2012.



Number of reported confirmed rubella cases, by year, in Wisconsin, 2008–2023

Trends

Figure 12. After rubella vaccine was introduced in 1969, the number of cases decreased in Wisconsin and in the United States.

Number of reported confirmed rubella cases, by year, Wisconsin, 1978-2023



Tetanus Wisconsin, 2023

Because the bacteria that cause tetanus live in soil, unvaccinated people and people overdue for a tetanus booster shot are at risk for tetanus when they have a contaminated wound or <u>other breaks in the skin</u>. Tetanus cases continue to occur among Wisconsin residents. For example, in 2015 an unvaccinated Wisconsin child was diagnosed with tetanus requiring hospitalization for 33 days (including 15 days in intensive care). Preventing tetanus is important because tetanus can cause severe <u>symptoms and complications</u>, including breathing difficulty that can lead to death. Vaccination with tetanus vaccine is the most effective method for preventing tetanus.

2023 Data

Figure 13. During 2023, there were no tetanus cases reported among Wisconsin residents. Number of reported confirmed tetanus cases, by year, in Wisconsin, 2014–2023



Trends

Figure 14. After tetanus vaccine was introduced for routine childhood vaccination during the late 1940s, the number of cases decreased steadily in Wisconsin and in the United States. Number of reported tetanus cases, by year, Wisconsin, 1951–2023



Varicella Wisconsin, 2023

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Varicella affects people of all ages in Wisconsin and the United States. Varicella can result in <u>serious</u> <u>complications</u>, especially for infants, adolescents, adults, pregnant people, and immunocompromised people. The varicella vaccine prevents most cases and complications.

2023 Data

Cases were reported from 41 of Wisconsin's 72 counties. Ages ranged from less than1 month to 67 years (median: 7 years). Among those aged 1–3 years, 51% were up to date for age and had received one dose of varicella vaccine. Among those aged 4–18 years, 21% were up to date for age and had received two doses of varicella vaccine, 10% had received one dose of varicella vaccine, and 63% had not been vaccinated with varicella vaccine. Seven individuals were hospitalized, including three infants. Of these seven individuals, six had received no varicella vaccine and one received one dose. Three of the individuals hospitalized were adults eligible for varicella vaccination.

Figure 15. During 2023, 125 confirmed and 62 probable varicella cases were reported among Wisconsin residents.



Number of reported confirmed varicella cases, by year, Wisconsin, 2014-2023

Trends

In response to outbreaks among vaccinated children, in 2006 a second dose of varicella vaccine was routinely recommended. Cases and outbreaks continue to occur. Surveillance for varicella is challenging because most cases are not laboratory confirmed and the clinical presentation of varicella can be confused with other rash illnesses.

Figure 16. After varicella vaccine was introduced in 1995, the number of cases decreased greatly in Wisconsin and in the United States.

Number of reported confirmed varicella cases, by year, Wisconsin, 1996–2023



Other VPDs

For additional information, resources, and data on VPDs not covered in this report, visit Wisconsin's <u>Immunization Program webpage</u>.

- <u>COVID-19</u>
- <u>Hepatitis A</u>
- <u>Hepatitis B</u>
- <u>Hepatitis D</u>
- Haemophilus influenzae
- <u>Human papillomavirus (HPV)</u>
- Influenza
- <u>Mpox</u>
- <u>RSV</u>
- <u>Pneumococcal disease</u>
- <u>Rotavirus</u>
- <u>Shingles</u>
- <u>Tetanus</u>

Notes

Additional Resources

Vaccination rates for Wisconsin: <u>https://www.dhs.wisconsin.gov/immunization/data/index.htm</u> Vaccine-preventable diseases by year: <u>https://www.dhs.wisconsin.gov/publications/p02259.pdf</u> Recommended vaccination schedules:

Children: <u>https://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html</u> Adults: <u>https://www.cdc.gov/vaccines/schedules/hcp/adult.html</u>

References

Epidemiology and Prevention of Vaccine-Preventable Diseases: The Pink Book: <u>https://www.cdc.gov/vaccines/pubs/pinkbook/index.html</u>

Data Source

The diseases included in this report have significant public health impact and are required by law to be reported to the local health officer when suspected in a Wisconsin resident. This information is collected and reported to DHS through the WEDSS: <u>https://www.dhs.wisconsin.gov/wiphin/wedss.htm</u>

More information on disease reporting: https://www.dhs.wisconsin.gov/disease/reporting.htm

For more information about this data, please contact DHSImmProgram@dhs.wisconsin.gov

Limitations

Monitoring trends in disease occurrence depends on complete and consistent reporting of diseases to DHS through the WEDSS. This report only includes information on the cases that were reported to DHS. Therefore, to the extent that diseases are underreported or misreported to DHS, the results depicted in this report might differ from the true burden of these diseases in Wisconsin.

Abbreviations

CDC: Centers for Disease Control and Prevention DHS: Department of Health Services WEDSS: Wisconsin Electronic Disease Surveillance System DTaP: diphtheria, tetanus, acellular pertussis vaccine MMR: measles, mumps, and rubella vaccine Tdap: tetanus, diphtheria, acellular pertussis vaccine

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