

The Power of Maternal Vaccination revealed in Denmark's Pertussis Epidemic

Researchers discuss the recent [pertussis](#) epidemic in Denmark, focusing on age-specific incidences, infant hospitalization rates, and the effectiveness of maternal vaccination to enhance infant protection.



What is Pertussis?

Whooping cough, or pertussis, is a highly contagious bacterial infection of the respiratory tract caused by *Bordetella pertussis*. It poses a severe threat to individuals of all ages, with infants under one year of age at the greatest risk of [severe complications](#) and mortality.

Additional research is needed to understand the evolving epidemiology of pertussis, assess the effectiveness of new [vaccination](#) strategies, and identify optimal prevention measures for vulnerable populations.

Monitoring Pertussis in Denmark

In Denmark, the surveillance of pertussis [infections](#) and coverage of vaccinations against them are efficiently managed by the Statens Serum Institut (SSI) under the Danish Ministry of Health.

More specifically, monitoring pertussis involves utilizing various resources such as the Danish Microbiology Database (MiBa) for infection data, the Civil Registration System for demographic information, the Danish National Patient Registry for details on comorbidities and hospitalizations, and the Danish National Vaccination Registry for vaccination records. Pertussis infections are considered laboratory notifiable, with [polymerase chain reaction](#) (PCR) testing as the main diagnostic method.

Pertussis Vaccination Protocol

Denmark follows a rigorous vaccination schedule against pertussis, which targets the disease along with [diphtheria](#), tetanus, polio, and *Haemophilus influenzae* type b infections.

Children are vaccinated at three, five, and 12 months of age and subsequently receive a booster vaccination at five years old. This schedule underscores the country's commitment to combating pertussis through early [immunization](#).

Epidemiology of Pertussis

Historically, pertussis has followed a consistent pattern in Denmark, with an [interepidemic](#) incidence of approximately 17 cases per 100,000 individuals annually, except for recent epidemics in 2016 and 2019. Although the occurrence of pertussis is not strictly seasonal, a trend of higher cases from August to November has been noted.

Alongside other respiratory infections, the spread of pertussis significantly decreased following the introduction of non-pharmaceutical interventions in 2020 to mitigate the [coronavirus disease 2019](#) (COVID-19) pandemic. In fact, these measures led to an almost complete disappearance of pertussis cases.

The 2023 Pertussis Epidemic

The year 2023 marked a significant resurgence of pertussis in Denmark, with reported cases five times the usual interepidemic [rate](#) by August and reaching a peak incidence of 337 cases per 100,000 population by November.

This resurgence is due to the [cyclic nature](#) of pertussis, which tends to manifest through periodic epidemics every three to five years. Notably, age-specific incidence rates during this period indicated a significant rise in cases among adolescents, while infants were associated with a relatively lower incidence rate as compared to previous outbreaks.

Vaccination Coverage and its Impact

[Investigations](#) into the vaccination status of children under two years of age affected by pertussis in 2023 revealed that 37.9% were unvaccinated, 48.1% had received partial vaccination, and only 14.1% were fully vaccinated against the disease.

Additionally, about 85% of pregnant women received pertussis vaccination between August and December 2023, which aims to protect newborns through maternal immunization. The strategy of vaccinating pregnant women late in the second or early in the [third trimester](#) aligns with efforts to increase immunity in the very young.

Hospitalizations and Disease Severity

Despite rising pertussis cases, the overall hospitalization rate remained low, with only 2% of all cases requiring hospital admission for more than 12 hours. This low [hospitalization rate](#), especially among infants between zero and two months of age, may reflect the protective effect of maternal vaccination.

The incidence of severe pertussis cases leading to hospitalization was also significantly lower in 2023 than in previous epidemics. This indicates a positive outcome of vaccination efforts among [pregnant women](#).

Conclusion

Denmark faced a significant pertussis outbreak beginning in August 2023 that peaked in November with a [record incidence rate](#). Despite a decline in cases into early 2024, the impact of this recent pertussis epidemic was profound, especially among adolescents with a notable disease prevalence.

The lower incidence of pertussis in infants compared to past outbreaks, along with reduced hospitalization rates, reflects the effectiveness of vaccinating pregnant women, a practice widely endorsed by [Danish health authorities](#). This strategy, alongside high vaccination coverage among children and initiatives to ensure timely vaccinations, demonstrates Denmark's protective approach to combating pertussis while considering its inevitable cyclic nature.

Source:

<https://www.news-medical.net/news/20240408/Denmarks-pertussis-epidemic-reveals-the-power-of-maternal-vaccination.aspx>