

Newsletter New Vaccine Breakthroughs

💉 Meningococcal Meningitis Updates: where we are in 2025

*Edition 2 · April 30th, 2025 *

✉ Editor's Note / Introduction

Welcome to this edition of Newsletter New Vaccine Breakthrough—your trusted source for insights into vaccine science, policy, and innovation.

👉 This issue covers:

1. WHO guidelines on meningitis diagnosis, treatment and care
2. Invasive Meningococcal Disease in the Post-COVID World: Patterns of Disease Rebound.
3. Methods to evaluate the performance of a multicomponent meningococcal serogroup B vaccine
4. Men Pentavalent Vaccines: Men ABCWY & Men ACWYX

Let's dive in. 

📌 1. Spotlight: Topic of the Month:

♦ [2025 WHO guidelines on meningitis diagnosis, treatment and care](#)

🧠 Summary: In line with the Defeating meningitis by 2030: a global road map, the WHO guidelines on meningitis diagnosis, treatment and care provide evidence-based recommendations for the clinical management of children and adults with community-acquired meningitis, including acute and long-term care.

Meningitis poses a significant public health threat, despite successful efforts to control the disease globally. The burden of morbidity and mortality from meningitis remains high, particularly in low- and middle-income countries and in settings experiencing large-scale, disruptive epidemics. Approximately one in five individuals affected by bacterial meningitis incurs long-term complications, which may result in disability and have a profound impact on quality of life. The guidelines are primarily intended for health-care professionals working in first- or second-level health-care facilities, including emergency, inpatient and outpatient services. They are also directed at

policymakers, health-care planners and programme managers, academic institutions, non-governmental and civil society organizations to inform capacity-building, teaching and research agendas.

A. Diagnosis

Lumbar puncture

Good practice statement

In individuals with suspected acute meningitis, lumbar puncture should be performed as soon as possible, preferably before the initiation of antimicrobial treatment, unless there are specific contraindications or reasons for deferral.

Cerebrospinal fluid investigations

Strong recommendation for

In individuals with suspected acute meningitis, Gram stain should be performed on cerebrospinal fluid samples.

Strong recommendation. Moderate certainty of evidence.

Strong recommendation for

In individuals with suspected acute meningitis, cerebrospinal fluid investigations should be performed to determine white blood cell count (total and differential), protein concentration, glucose concentration and the cerebrospinal fluid to blood glucose ratio.

Strong recommendation. Moderate certainty of evidence.

Cerebrospinal fluid culture

Good practice statement

In individuals with suspected acute meningitis, cerebrospinal fluid culture and antimicrobial susceptibility testing remain the gold standard for bacterial pathogen identification.

Cerebrospinal fluid molecular testing

Strong recommendation for

In individuals with suspected acute meningitis, PCR-based molecular tests for relevant pathogens should be performed on cerebrospinal fluid samples.

Strong recommendation. Low certainty of evidence.

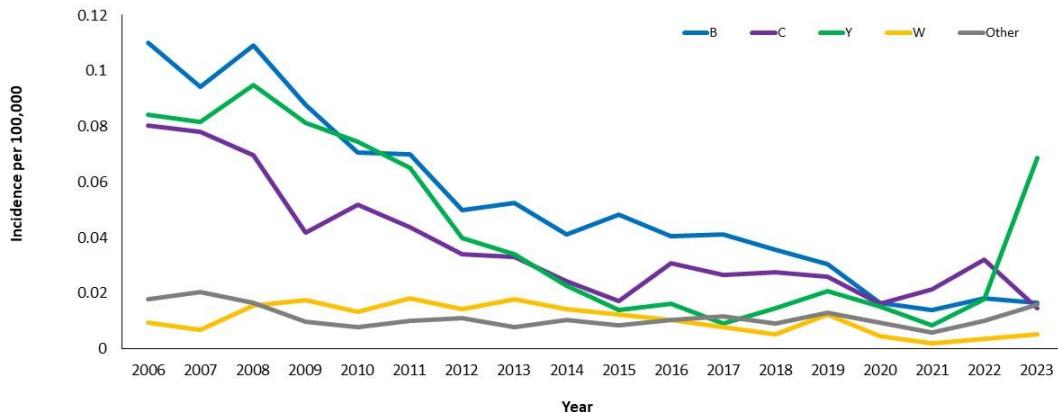
2. Global IMD Update:

- ♦ **Invasive Meningococcal Disease in the Post-COVID World: Patterns of Disease Rebound.**

During the COVID-19 pandemic, substantial worldwide decreases in diseases typically transmitted via the respiratory route, such as *S. pneumoniae*, *H. influenzae*, and *N. meningitidis* were observed, likely due to the implementation of non-pharmacological interventions designed to prevent the spread of COVID-19. Some predicted that meningococcal disease would remain low and not rebound. In five countries where data are publicly available regarding IMD case numbers during and after the pandemic, we found that a consistent trend emerged in which the incidence of IMD declined throughout 2020 and into 2021 but began to increase in 2021 (England and Chile) or 2022 (United States, France, and Australia).

- ♦ **The incidence of meningococcal disease steadily declined in the United States from the late 1990s through 2020–2021**, when the incidence of meningococcal disease reached a low of 0.06–0.07 cases per 100,000 population. However, cases of meningococcal disease have increased sharply since 2021 and now exceed pre-COVID-19 pandemic levels. U.S. cases of meningococcal disease have increased sharply since 2021 and now exceed pre-pandemic levels. **In 2023, 438 confirmed** and probable cases were reported. This is the largest number of U.S. meningococcal disease cases reported since 2013, *Neisseria meningitidis* serogroup Y drives much of this recent increase.

Trends in Meningococcal Disease Incidence by Serogroup – United States, 2006–2023*



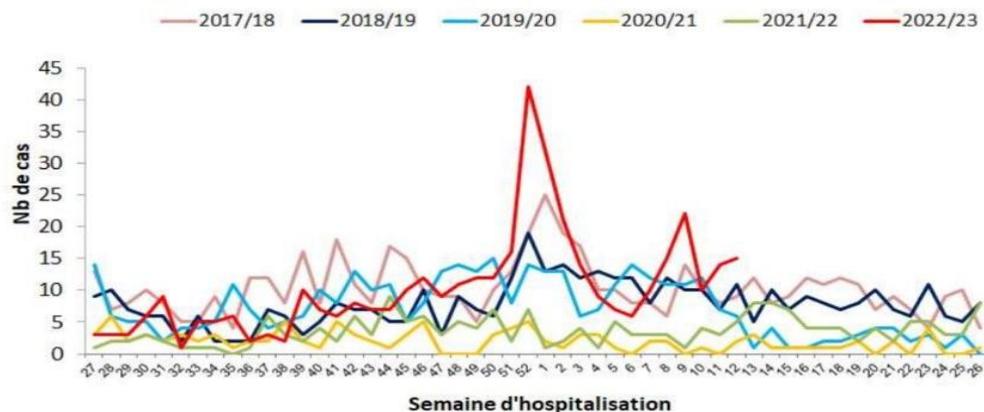
Source: NNDSS data with additional serogroup data from Active Bacterial Core surveillance (ABCs) and state health departments

*2023 data are preliminary

◆ Invasive Meningococcal Disease Epidemiological Situation Post Covid19 Pandemic in France.

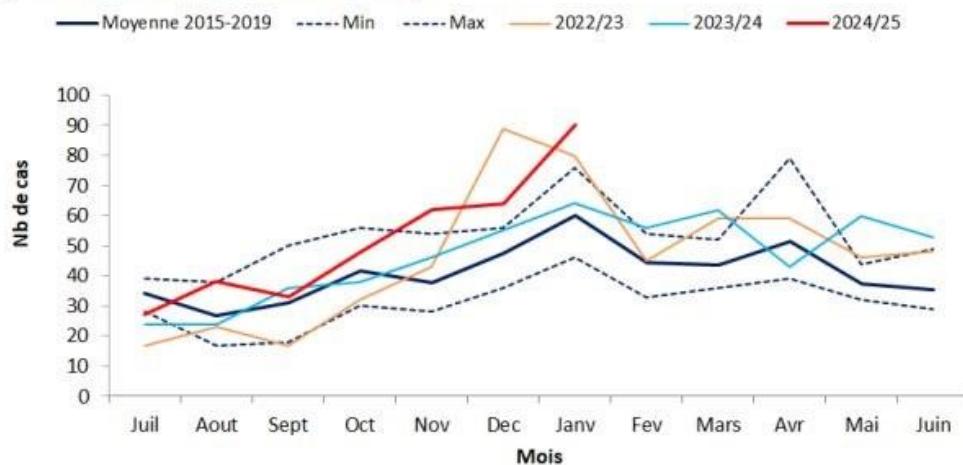
A significant resurgence of invasive meningococcal infections (IMI) was observed [in France following the Covid 19 pandemic starting from December 2022 & Jan 2023](#). During the 2024-2025 season, with high number of cases in January 2025. For 2024, 615 cases of IMI were reported in France, which is the highest annual number of cases since 2010. 84 cases reported in December 2022, above the peak that was typically observed at the end of winter season (between January and March), before the COVID-19 pandemic. (Fig 1).

Figure 1 : Nombre de cas d'infections invasives à méningocoque par semaine et par saison (Janvier – Mars 2023 : données non consolidées)



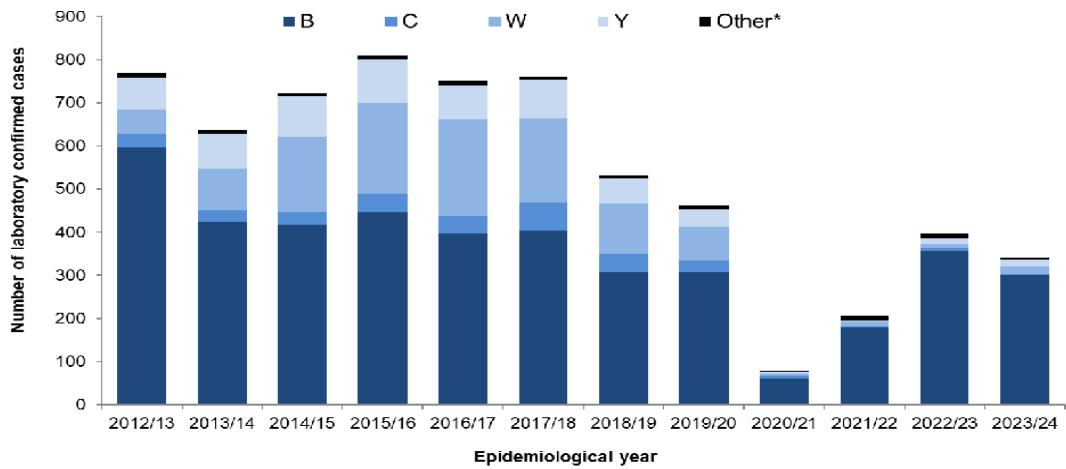
[High number of IMD cases in January 2025](#), 90 cases, it is above the peak observed following the post pandemic period Dec 2022. Link with high epidemic of seasonal viral infections (incl. flu) that may lead to IMD infection (Fig1).

Figure 1. Nombre de cas d'infections invasives à méningocoque par mois et par saison (janvier 2025 : données non consolidées)



- ◆ [Invasive meningococcal disease in England: annual laboratory confirmed reports for epidemiological](#)

In England, the national UK Health Security Agency (UKHSA) Meningococcal Reference Unit (MRU) confirmed 341 cases of IMD in 2023/24, compared to 396 cases reported in 2022/23 when the country was emerging from COVID-19 pandemic restrictions. IMD cases had fallen by 83% in 2020/21, with 80 cases, compared to 463 confirmed cases in 2019/20, and 531 confirmed cases in 2018/19, before the COVID-19 pandemic began (figure 1).



3. Science Simplified:

- ◆ [Methods to evaluate the performance of a multicomponent meningococcal serogroup B vaccine.](#)

Meningococcal serogroup B (MenB) vaccine licensure was based on the assessment of vaccine-induced immune responses by human serum bactericidal antibody (hSBA) assay against a small number of antigen-specific strains complemented by strain coverage predictions. However, the evaluation of vaccine strain coverage is challenging because of genotypic and phenotypic diversity in surface-exposed MenB strain antigens. This narrative review considers the principal methods applied to assess the performance of a multicomponent MenB vaccine at different stages of its development. Traditional hSBA assay against a limited panel of strains is useful at all stages, while predicted strain coverage methods, such as the meningococcal antigen typing system, are used independent of clinical trials. A new method, the endogenous complement hSBA assay, has been developed to evaluate a vaccine's ability to induce a bactericidal immune response in clinical trials, in conditions that approximate real-world settings through the use of each vaccinee's serum as a source of complement and by testing against a panel of 110 epidemiologically representative MenB strains. Each assay, therefore, has a different scope during the vaccine's development and all complement each other, enabling comprehensive evaluation of the performance of multicomponent MenB vaccines, in advance of real-world evidence of vaccine effectiveness and vaccine impact.

	Method	Strength(s)	Limitation(s)
MATS	Sandwich ELISA for fHbp, Nada, NHBA antigens combined with PorA genotyping to predict 4CMenB strain coverage	<ul style="list-style-type: none"> Standardized, reproducible antigen typing system Assesses the level of expression and genetic diversity of antigens 	<ul style="list-style-type: none"> Specific to multicomponent 4CMenB Cannot be used on non-culture-confirmed cases Does not take synergistic effects of multiple antigens into account
MEASURE	Flow cytometric method that generates phenotypic fHbp expression data to predict MenB-fHbp strain coverage	<ul style="list-style-type: none"> Specific and reproducible method to detect the level of fHbp expressed on the bacterial surface 	<ul style="list-style-type: none"> Specific to fHbp antigen – not developed for multicomponent MenB vaccines Can only be used when case isolate is available Measures only antigen expression level and not antigenic diversity or cross-reactivity
gMATS	Genotyping tool based on correlation between 4CMenB antigen genotyping and MATS data	<ul style="list-style-type: none"> Allows prediction of vaccine strain coverage for cultured and non-cultured cases Uses published and unpublished MATS data on IMD isolates Historical data show 50% of unpredictable isolates can be considered as covered 	<ul style="list-style-type: none"> Specific to multicomponent 4CMenB Does not take synergistic effects of multiple antigens into account Does not predict coverage for new alleles or alleles without available MATS data
MenDeVAR	Genotyping tool based on published antigen DNA sequencing and strain serologic data	<ul style="list-style-type: none"> Allows prediction of vaccine strain coverage for cultured and non-cultured cases Can be used to estimate 4CMenB and MenB-fHbp strain coverage 	<ul style="list-style-type: none"> Uses published data only Unable to provide predictions if public data insufficient or absent (newly emerging antigenic variants) Unclear how to consider unpredictable strains
GeCoPred	4CMenB genomic coverage prediction tool that classifies entire genomes of meningococcal strains based on machine learning	<ul style="list-style-type: none"> Gives a prediction for every isolate Based on both MATS and hSBA assay data; can use information on additional antigens, antigen expression levels, synergistic effects 	<ul style="list-style-type: none"> Specific to multicomponent 4CMenB

⌚ 4. Pentavalent meningococcal conjugate vaccine:

- ♦ [Safety and immunogenicity of a pentavalent meningococcal conjugate vaccine targeting serogroups A, C, W, Y, and X when co-administered with routine childhood vaccines at ages 9 months and 15 months in Mali: a single-centre, double-blind, randomised, controlled, phase 3, non-inferiority trial](#)

In this single-centre, double-blind, randomized, controlled, phase 3, non-inferiority trial, children aged 9–11 months who had completed their local infant Expanded Program on Immunization (EPI) vaccines, when compared with a licensed, quadrivalent meningococcal conjugate vaccine Men ACWY-TT, and given alongside other routine vaccines, a single dose of pentavalent meningococcal conjugate vaccine A, C, W, Y, and X NmCV-5 was safe and elicited a non-inferior immune response in infants aged 9 months and young children aged 15 months.

- ◆ [GSK's 5-in-1 meningococcal vaccine PENMENVY receives positive recommendation from US Advisory Committee on Immunization Practices](#)

the US Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP) on his meeting April 16th, 2025, has voted to recommend use of Men ABCWY when both Men ACWY and Men B are indicated at the same visit.

👏 Thanks for reading!

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