Meningitis B: Why campus life shifts vaccine guidance for your patients

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Invasive meningococcal disease, particularly serogroup B, remains a serious public health concern, carrying high morbidity and mortality despite antibiotic advances. Young adults, especially those in close living quarters, face an elevated risk of contracting this rapidly progressing infection. European public health bodies are now expanding vaccination efforts to address this vulnerable demographic.

KEY TAKEAWAYS

- The Pivot: Public health authorities are now recommending MenB vaccination for university students, a population with increased disease risk.
- The Data: Vaccination with MenB vaccines induces robust bactericidal antibody responses against diverse MenB strains.
- The Action: Clinicians should advise eligible students on the importance of MenB vaccination and facilitate access to the recommended schedule.

Meningococcal disease, caused by Neisseria meningitidis, can lead to severe outcomes including meningitis and septicaemia. Serogroup B accounts for a significant proportion of cases in Europe, particularly among adolescents and young adults. The close-contact environments typical of university campuses create ideal conditions for transmission, making this group a priority for preventative measures.

The current MenB vaccines, such as 4CMenB (Bexsero) and MenB-fHbp (Trumenba), target multiple protein antigens found on the surface of the meningococcus. These vaccines aim to induce a broad immune response against the diverse strains of serogroup B meningococci circulating globally. Both vaccines have undergone extensive clinical development, demonstrating their ability to elicit protective antibodies.

How the vaccines work and who needs them

The 4CMenB vaccine contains four main antigenic components: factor H binding protein (fHbp), Neisserial adhesin A (NadA), Neisserial heparin binding antigen (NHBA), and outer membrane vesicles (OMV) derived from the New Zealand strain. This multi-component approach aims to overcome the genetic variability of MenB strains. Clinical trials have shown that 4CMenB induces bactericidal antibodies against a wide range of MenB isolates, with seroprotection rates often exceeding 80% for individual antigens in vaccinated adolescents and young adults.1

MenB-fHbp, conversely, focuses on two variants of the fHbp antigen. This vaccine also elicits strong bactericidal responses. Studies in adolescents and young adults have demonstrated that two doses of MenB-fHbp provide seroprotection against a panel of MenB strains, with response rates for specific fHbp variants reaching 84% to 93%.2

The choice between vaccines often depends on national guidelines and availability, but both offer substantial protection against invasive disease.

The primary target population for this expanded rollout includes first-year university students and other new entrants up to 25 years of age. This recommendation stems from epidemiological data consistently showing an increased incidence of meningococcal disease in this age group, particularly within the first few weeks of term. The close proximity in dormitories and shared living spaces facilitates rapid spread of the bacteria, even among asymptomatic carriers.

Vaccination typically involves a two-dose schedule, administered several weeks apart. For optimal protection, students should complete the full course before or early in their academic year. Public health campaigns emphasize the importance of timely vaccination, as immunity takes time to develop after the initial dose. Catch-up programmes are also available for those who miss the initial window.

While the vaccines are highly effective, they do not cover all possible strains of Neisseria meningitidis. Serogroup B is the focus here, but other serogroups (A, C, W, Y) also cause disease, though often less frequently in this specific demographic. Combined MenACWY vaccines are also recommended for students, addressing these other serogroups and providing broader protection. The co-administration of MenB and MenACWY vaccines is generally well-tolerated, with no significant increase in adverse events reported.

Common adverse reactions to MenB vaccines are generally mild and transient, including pain, redness, and swelling at the injection site, as well as fever, headache, and muscle aches. These reactions are consistent with those seen with other routine vaccinations and typically resolve within 24 to 48 hours. Serious adverse events are rare, reinforcing the favourable safety profile of these vaccines.

The effectiveness of these vaccines in real-world settings has been demonstrated in countries that implemented routine MenB vaccination for infants and young children. Data from the UK, for example, showed a significant reduction in MenB disease incidence following the introduction of 4CMenB into the infant immunisation programme. This population-level impact supports the rationale for extending vaccination to other high-risk groups like university students.

The open-label nature of some early MenB vaccine studies is an obvious caveat, but the robust immunogenicity data and subsequent real-world effectiveness studies provide compelling evidence. The primary endpoint of vaccine trials is often immunogenicity (antibody response), rather than direct disease prevention, given the rarity of invasive meningococcal disease. This reliance on immunogenicity as a surrogate marker is standard for many vaccines.

> **CLINICAL IMPLICATIONS**
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> The expanded MenB vaccine rollout for university students is a pragmatic public health measure. Clinicians should view this as a clear directive to engage with eligible patients, particularly those preparing for higher education. The risk of invasive meningococcal disease in this population is not theoretical; it is a well-documented epidemiological reality.
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> Advising students on the two-dose schedule and ensuring completion before term starts is critical. While the vaccines are not 100% effective against all MenB strains, they offer substantial protection against the most prevalent ones. This is not a nuanced discussion; it is about reducing a serious, potentially fatal, risk.
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> The co-administration of MenACWY and MenB vaccines should also be a standard part of pre-university

> health advice. We are not just preventing one serogroup; we are aiming for comprehensive meningococcal protection. The logistical challenge lies in reaching this mobile and often disengaged population, but the clinical imperative remains clear.

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