Science Policy Outreach Task Force at Northwestern University OVERVIEW ON MENINGITIS B IN ILLINOIS



SPOTlight: Meningitis B is a highly prevalent disease in the United States particularly in the young adult population and has two effective vaccines available.

What is Meningitis B?

- Meningitis B is one type of meningococcal disease that is caused by *Neisseria meningitidis* bacteria¹. There are 12 different types of bacteria, but there are five prominent groups which cause serious and potentially dangerous infections A, C, W, Y, and B.
- Broadly, meningitis is an inflammation of the protective membranes covering the brain and spinal cord, known as the meninges. Symptoms include fever, headache, and neck stiffness. Meningitis can also lead to infections of the bloodstream.
- Meningitis B is particularly dangerous because, while uncommon, about 10-15% of people infected with the disease will die, sometimes within 24 hours. Of those who survive, about 20% will suffer long-term problems, including brain and/or kidney damage, hearing loss, nervous system problems, and removal of infected areas.²
- Rates of total meningococcal disease are relatively low in the United States (<0.25/100,000 in 2018), with the disease disproportionately affecting those younger than 4 years old and those older than 80 years old³. However, Meningitis B is more concerning because of its ability to spread quickly and unpredictably within communities, often leading to devastating outcomes. This is especially notable in situations where many people live together, such as at universities.⁴

Is Meningitis B preventable?

- Meningitis B has become increasingly preventable over the years as there is now a vaccine available. Additionally, as our understanding of how to treat and identify the disease has improved, fewer cases are fatal in the United States.
- By using the Meningitis B vaccine, total prevention of the disease is possible. However, because the vaccine is relatively new (2014), there is limited long-term data on its efficacy.

What is the Meningitis B vaccine?

- There are two vaccines available for Meningitis B: Bexsero (GlaxoSmithKline) and Trumenba (Pfizer)⁵.
- Vaccine use is most strongly recommended for people ages 16-23. A vaccine covering the other types of meningitis is part of the Center for Disease Controls list of recommended vaccines, so the vast majority of people have received it. However, a vaccine for Meningitis B was not available until 2014, meaning many people have never gotten it.
- People ages 16-23 are at high risk for the disease because many go to universities where they live in close proximity to one other, increasing the chance that the disease spreads.⁶
- Like all vaccines, those designed for meningitis B are safe and certified by the FDA for human use. The contents of the two vaccines differ slightly, but both contain a solution designed to stimulate the immune system so that if the disease is encountered in the future, the body will know how to defend against it.
- Inside each vaccine is an inactive part of the bacteria as well as ingredients that activate the immune system. Both components are needed – immunity occurs when the cells in the immune system are activated by the vaccine ingredients and then use the inactive part of the bacteria to make cells that are able to recognize a new infection. This way, the causative agent of meningitis B is seen in the body and the immune system can destroy it.

References and additional resources

[1] Mayo Clinic, Diseases & Conditions, <u>https://www.mayoclinic.org/diseases-conditions/meningitis/symptoms-causes/syc-20350508</u>

[2] Centers for Disease Control and Prevention, Epidemiology and Prevention of Vaccine-Preventable Diseases, https://www.cdc.gov/vaccines/pubs/pinkbook/mening.html

[3] Centers for Disease Control and Prevention, Meningococcal Disease, https://www.cdc.gov/meningococcal/surveillance/index.html

[4] Villena et al. 2018. Global epidemiology of serogroup B meningococcal disease and opportunities for prevention with novel recombinant protein vaccines. *Human Vaccines & Immunotherapeutics*, **14**, 1042-1057.

[5] Centers for Disease Control and Prevention, Vaccines and Preventable Diseases, https://www.cdc.gov/vaccines/vpd/mening/hcp/about-vaccine.html

[6] Mbaeyi et al. 2019. Meningococcal Disease Among College-Aged Young Adults. Pediatrics, 143.

The Science Policy Outreach Task Force (SPOT) compiled this document. SPOT is a nonpartisan organization of Northwestern University researchers focused on advocating for science, evidence-based reasoning, and scientifically-sound policy to the voting-aged public and policymakers. This document was created in collaboration with the University of Chicago. This document does not represent an official statement by Northwestern University or the University of Chicago. It does not contain an exhaustive summary of all scientific issues, but rather is intended to provide background information relevant to the topic.

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