NOVARTIS

Meningococcal Disease: Group B

- *Meningococcal bacteria can cause invasive meningococcal disease resulting in meningitis and septicaemia, both serious and potentially life-threatening conditions*[1,2]
- *Meningococcal disease is a rare, but swift-moving infection that can result in death or disability within 24 hours of symptom onset*[3,4]
- *Neisseria meningitidis serogroup B has become one of the most prevalent groups that cause meningococcal disease in the US, accounting for an estimated 33 percent of all reported cases in 2013*[5]
- *Adolescents and young adults are at risk of contracting meningococcal disease due to common factors, such as living in close quarters and sharing utensils or drinking glasses*[6,7]
- *Vaccines are currently available to help protect against the five groups of meningococcal bacteria (A, B, C, W-135, and Y) that cause the majority of meningococcal disease cases worldwide*[6]

Signs and Symptoms

The initial symptoms of meningococcal disease are often unspecific, and can be difficult for even a healthcare professional to diagnose the disease in the early stages. More apparent symptoms, such as neck stiffness and petechial (small purplish) rash, may not appear until relatively late in the illness, which can delay lifesaving treatment[3,8].

Meningococcal disease can be difficult to diagnose and result in life-threatening consequences[1,2]

Meningococcal Disease Symptoms[3,8]	
– Fever	– Sensitivity to light
– Diarrhea	– Inactivity, sluggishness
– Poor eating and drinking	– Sleepiness
– Vomiting & nausea	– Confusion
– Headache	– Rash (not present in all cases)
– Painfully stiff neck	– Seizures

Transmission

Meningococcal bacteria can be easily spread to others through direct contact with respiratory droplets[7].

Adolescents and young adults are at risk of contracting meningococcal disease because of common social factors, such as convening in groups and sharing food utensils and drinks[6,7]. These age groups have a 10 percent fatality rate from meningococcal disease compared to other age groups[9].

Recently, outbreaks of meningococcal group B disease occurred on the campuses of Princeton University and the University of California-Santa Barbara (UCSB), resulting in the initiation of more than 15,000 vaccination regimens as part of a US Centers for Disease Control and Prevention (CDC)-sponsored protocol, under an Investigational New Drug (IND) application[10].

At any given time, it is believed that up to 20% of people worldwide are carrying meningococcal bacteria in the back of their nose and throat without showing any symptoms[7,11,12]

Protection Against Meningococcal Disease

Meningococcal disease can be treated with antibiotics, though it is important that treatment be started quickly[7]. Despite appropriate medical treatment, there remains a 10 percent fatality rate, typically within 24 hours after the onset of symptoms[3,4,6,9].

Even with appropriate medical treatment, as many as 10% of people infected with meningococcal disease will die and almost 1 in 5 survivors will suffer long-term disability [9,13,14]

Of those who survive meningococcal disease, up to 20 percent will suffer with long term consequences such as brain damage, loss of a limb and loss of hearing[7,13,14].

Vaccines are currently available to help protect against five groups of meningococcal bacteria (A, B, C, W-135, and Y) that cause the majority of cases around the world. In the US, the most prevalent groups are B, C and Y[6].

References

1. World Health Organization (WHO). Immunization, vaccines and biologicals: meningococcal meningitis. March 2014. Available at: http://www.who.int/immunization/diseases/meningitis/en/. Accessed January 2015.
2. World Health Organization (WHO). Meningococcal vaccines position paper. Weekly Epidemiological Record No. 47, 2011, 86, 521-540. Available at: http://www.who.int/wer/2011/wer8647.pdf. Accessed January 2015.
3. Thompson MJ, Ninis N, Perera R, et al. Clinical recognition of meningococcal disease in children and adolescents. *Lancet* 2006;367(9508):397-403.
4. de Greeff SC, de Melker HE, Schouls LM, Spanjaard L, van Deuren M. Pre-admission clinical course of meningococcal disease and opportunities for the earlier start of appropriate intervention: a prospective epidemiological study on 752 patients in the Netherlands, 2003–2005. *Eur J Clin Microbiol Infect Dis* 2008;27:985-992.
5. Centers for Disease Control and Prevention (CDC). Active Bacterial Core Surveillance (ABCs) Report Emerging Infections Program Network – Neisseria meningitidis, 2013-provisional. http://www.cdc.gov/abcs/reports-findings/survreports/mening13.pdf. Accessed January 2015.
6. Centers for Disease Control and Prevention (CDC). Prevention and Control of Meningococcal Disease; Recommendations of the Advisory Committee on Immunization Practices (ACIP). Morbidity and Mortality Weekly Report (MMWR). 2013; 62(2):1-13. Available at: http://www.cdc.gov/mmwr/pdf/rr/rr6202.pdf. Accessed January 2015.
7. World Health Organization (WHO). Meningococcal meningitis: fact sheet #141. November 2012. Available at: http://www.who.int/mediacentre/factsheets/fs141/en. Accessed January 2015.
8. Rosenstein NE, Perkins BA, Stephens DS, et al. Meningococcal disease. N Engl J Med. 2001;344:1378-1388.
9. Cohn AC, MacNeil JR, Harrison LH, et al. Changes in Neisseria meningitidis disease epidemiology in the United States, 1998–2007: implications for prevention of meningococcal disease. Clin Infect Dis 2010;50:184–91.
10. Centers for Disease Control and Prevention (CDC). "Serogroup B meningococcal vaccine & outbreaks: Questions and answers." August 21, 2014. Available at: http://www.cdc.gov/meningococcal/outbreaks/vaccine-serogroupb.html. Accessed January 2015.
11. Greenfield S, Sheehe PR, Feldman HA. Meningococcal carriage in a population of "normal" families. J Infect Dis 1971;123:67-73.
12. Caugant DA, Hoiby EA, Magnus P, et al. Asymptomatic carriage of *Neisseria meningitidis* in a randomly sampled population. J Clin Microbiol. 1994;32:323-30.
13. Kirsch EA, Barton RP, Kitchen L, Giroir BP. Pathophysiology, treatment and outcome of meningococcemia: a review and recent experience. *Pediatr Infect Dis J* 1996;15:967-79.
14. Edwards MS, Baker CJ. Complications and sequelae of meningococcal infections in children. *J Pediatr* 1981;99:540-5.