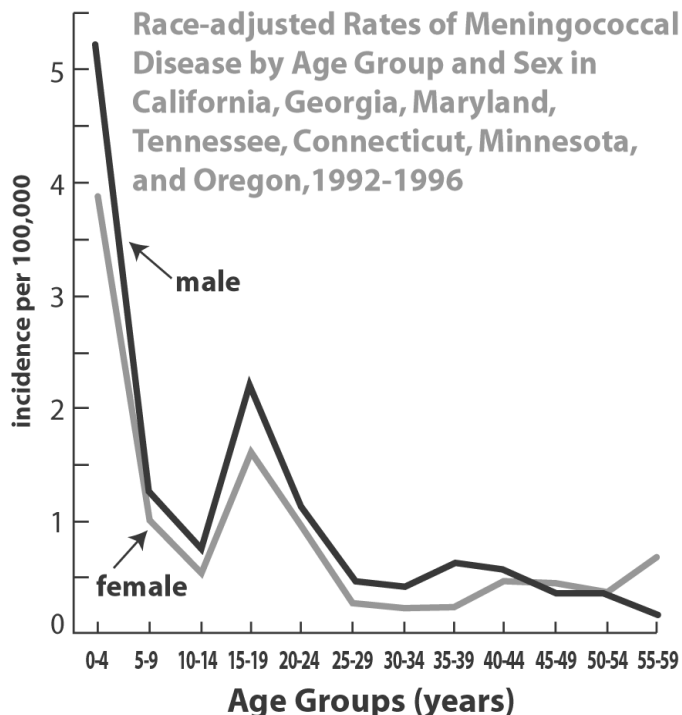


BACKGROUND

Meningococcal Disease in Adolescents and Young Adults

Overview

Meningococcal disease is a serious, potentially fatal bacterial infection that strikes nearly 3,000 Americans annually. In particular, adolescents and young adults are at increased risk of contracting meningococcal disease. Adolescents also have an unusually high death rate from the disease – in one study, nearly one in four cases among adolescents and young adults were fatal, compared to 10 to 12 percent of the overall population. However, the majority of cases among adolescents are potentially vaccine-preventable.^{1,2,3}



Source: Rosenstein et al, 1999

Adolescents and young adults are at increased risk of contracting meningococcal disease. Disease rates after early childhood peak at age 17.

Adolescents and Young Adults Are at Increased Risk of Meningococcal Disease

Adolescents and young adults have an increased incidence of meningococcal disease compared to the general population, accounting for nearly 30 percent of all U.S. cases annually, and case fatality rates are up to five times higher among 15- to 24-year-olds compared with other age groups.^{1,4} According to the U.S. Centers for Disease Control and Prevention (CDC), 28 percent of cases occurred among persons aged 12 to 29 years in the mid-1990s.^{1,5}

Certain lifestyle factors frequent among adolescents and young adults pose an increased risk for acquiring the disease.^{1,6,7} These include crowded living conditions, move to a

new residence, attendance at a new school with students from geographically diverse areas, going to bars, active or passive smoking and irregular sleeping patterns.^{1,6,7,8}

One clear example of the influence of crowded living conditions is the high risk of meningococcal infection among college freshmen living in dormitories.^{3,5,6} Another example is evident in the United States military. Prior to routine immunization programs, outbreaks of meningococcal disease occurred with the arrival of new recruits for basic training. Routine immunization of incoming military recruits has eliminated these outbreaks.

Meningococcal Disease Is a Serious and Potentially Fatal Infection

Meningococcal disease, caused by *Neisseria meningitidis*, is the most common cause of bacterial meningitis in children and young adults in the U.S. Left untreated, the disease can progress rapidly, often within hours of the first symptoms, and can lead to shock, death or serious complications, including hearing loss, brain damage, kidney disease or limb amputations.^{9,10} Permanent disability is common among survivors of meningococcal disease. Up to 20 percent of survivors suffer permanent disabilities.^{1,2,6,9,10}

Meningococcal Disease

- Caused by *Neisseria meningitidis*
- Nearly 3,000 U.S. cases annually
 - General population: 10% fatality rate
 - Adolescents: up to 25% fatality rate
- Peaks in late winter and early spring

Meningococcal disease is the most common cause of bacterial disease in the U.S.

Meningococcal disease is fatal in up to 25 percent of adolescents, compared with 10 percent of the general population. The devastating nature of meningococcal disease, coupled with the fact that the majority of cases among adolescents are potentially vaccine-preventable, make this a compelling public health issue.^{1,2,3}

Meningococcal Disease Spreads from Person to Person

Meningococcal disease is contagious. The disease is transmitted through air droplets and direct contact with infected persons (e.g., coughing or kissing, etc.).^{1,6,7,8}

The bacteria attach to the mucosal lining of the nose and throat where they can multiply. When bacteria penetrate the mucosal lining and enter the bloodstream, they travel rapidly throughout the body and can cause damage to many organs. The bacteria cannot live outside the body for very long, so the disease is not as easily transmitted as a cold virus. The disease occurs most often in late winter and early spring.

Ways to help prevent spreading the disease include following good hygiene practices, such as washing hands, and avoiding cigarettes.

Onset of Meningococcal Disease Is Sudden and Severe

Even those who have been vaccinated against meningococcal disease should be aware of the symptoms in themselves or in others.

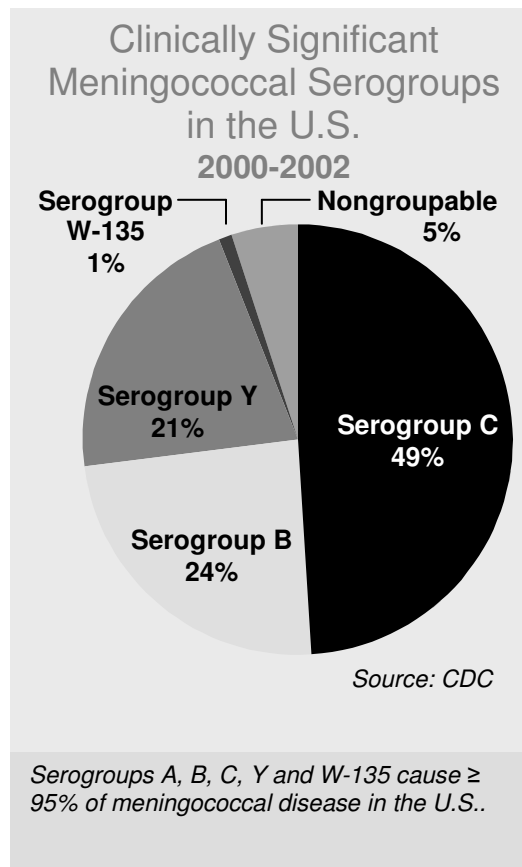
Meningococcal disease is often misdiagnosed as something less serious because early symptoms are similar to the flu. Early symptoms of meningitis, the most common form of meningococcal disease, are sudden onset of fever, headache and stiff neck. Nausea, vomiting, sensitivity to light, altered mental status and seizures often accompany these symptoms. After the disease has taken hold, a rash may appear.^{8,10}

Left untreated, the disease can progress rapidly, often within hours of the first symptoms, and can lead to shock, death or serious complications, including hearing loss, brain damage, kidney disease or limb amputations.^{9,10} Those who experience two more of these symptoms concurrently, or if the symptoms are unusually sudden or severe, are urged to seek medical care immediately.

Five Meningococcal Disease Serogroups Cause Infection

Five clinically significant meningococcal serogroups – A, B, C, Y and W-135 – cause more than 95 percent of meningococcal disease worldwide. Serogroups B, C and Y are responsible for most meningococcal infections in the U.S. In the U.S., serogroup A is extremely rare and serogroup W-135 causes a very small percentage of infections.⁵

The distribution of serogroups causing meningococcal disease in the U.S. changes over time, as it does worldwide. For example, between 1989 and 1991, serogroup Y caused 2 percent of cases; the proportion rose to 30 percent in the next five years (1992 and 1996). The changing pattern of disease underscores the need to provide simultaneous protection against as many serogroups as possible.⁶



Vaccine Available to Help Prevent Meningococcal Disease

The Food and Drug Administration (FDA) has approved a meningococcal conjugate vaccine for use among persons aged 2 to 55 years called Menactra, which is the first quadrivalent conjugate vaccine licensed in the U.S. for the prevention of meningococcal disease. Menactra is designed to offer protection against four serogroups of *N. meningitidis* (A, C, Y, W-135), which account for the majority of cases in the United States.

Conjugate vaccines have been shown to stimulate more powerful immune responses. In general, the benefits of a successful conjugate vaccine include long-term immunity without the need for revaccination as well as decrease carriage of meningococcal bacteria among adolescents, preventing the spread of the disease.

Before Menactra, a polysaccharide vaccine called Menomune – that provides protection against four of the five disease strains for three to five years – had been quite effective in reducing rates of the disease among certain populations.

Currently, there is no vaccine available in the U.S. to protect against serogroup B, though one is available in New Zealand. In Norway and Cuba, scientists are conducting studies of vaccines against the B serogroup. Additionally, there has been promising research sponsored by a parent group in Scotland that claims to have made a significant breakthrough in solving the serogroup B problem in that country.

As with all vaccines, there can be minor reactions, including pain and redness at the injection site or a mild fever, which typically last for one to two days. Immunization is not recommended during pregnancy or if the individual has a compromised immune system.

To find out if a meningococcal vaccination is right for your family, please contact your health care provider.

Meningococcal Conjugate Vaccine in Use in the U.K.

A monovalent conjugate vaccine (containing antigen only to serogroup C) is currently in use in the United Kingdom. There, disease epidemiology is different from the U.S. Serogroup C causes a larger proportion of cases in the U.K. than in the U.S., and serogroup Y causes very few cases.

Widespread use of the conjugate vaccine in the U.K. has reduced serogroup C disease rates by 81 percent. Additionally, children aged 1 to 17 years who were not vaccinated had a 60 percent reduction in the incidence of meningococcal disease.

This added level of protection conferred to the unvaccinated population is termed “herd immunity.” These results may provide a preview of the anticipated effects of a quadrivalent conjugate vaccine in the U.S.^{11,12,13}

CDC Recommendations on Vaccination

Immunization is the best method of prevention against meningococcal disease.

The Centers for Disease Control and Prevention (CDC) recommends meningococcal vaccination for all adolescents 11 through 18 years of age and college freshmen living in dormitories.¹⁴

About the National Meningitis Association

The National Meningitis Association (NMA) is a nonprofit organization founded by parents whose children have died or live with long-term disabilities from meningococcal disease. NMA's mission is to educate families, medical professionals and others about bacterial meningitis and prevention approaches to the disease.

For more information about NMA and its activities, or to contact a member of NMA, please call 1-866-FONE-NMA (1-866-366-3662) or visit www.nmaus.org.

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