
Commissioner's Column

Meningococcal Meningitis Update

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Meningococcal disease is the leading cause of bacterial meningitis in children and young adults. As many as 40 percent of adolescents and adults are asymptomatic transient carriers of *N. meningitidis*. The primary modes of transmission are respiratory droplet spread and direct contact.

From 2001 to 2005, there was an average of four cases of meningococcal disease and one death per year in Westchester County. All of these cases were sporadic; that is, not outbreak related. From 2002 to 2006, serogroup identification was available for 10 of the 20 cases reported in Westchester County. Four cases were serotype B, three were serotype Y, two were serotype C, and 1 was serotype W-135. Nationally, the proportion of cases caused by serogroup Y has increased from two percent during 1989 to 1991 to 37 percent during 1997 to 2002.

Approximately 1,400 to 2,800 cases of meningococcal disease are reported in the United States each year. In 2004, there were an estimated 125 deaths in this country due to the disease. The incidence of meningococcal disease is highest in infants under 12 months of age. Incidence declines in early childhood, increases during adolescence and early adulthood, and then declines among older adults. Among persons aged 17 to 20 years, the rate of invasive meningococcal disease is twice that of the general population. Although meningococcal meningitis accounted for only 20 (seven percent) of 272 reported meningitis cases in Westchester County from 2001 to 2005, it has a high potential to progress to fulminant disease (with a case fatality rate of about 10 to 14 percent) and result in long term sequelae (with an 11 to 19 percent rate of neurological deficits, limb and hearing loss). Nationally, meningococcal disease peaks in late winter to early spring but in Westchester, cases have occurred throughout the year for the past several years.

Recent studies demonstrate no increase in the incidence of meningococcal disease among college students in general but that freshman who live in dormitories are at modestly increased risk for meningococcal disease. In August 2003, a New York State Public Health Law became effective requiring colleges, universities and overnight camps to distribute information about meningococcal meningitis and vaccination to students enrolled for at least six semester hours per semester or at least four semester hours per quarter regardless of whether they live on or off campus, and to children who will remain at overnight camps for at least seven days.

Three to four percent of household contacts to a case of meningococcal disease also become ill with the disease. The risk to household contacts is 500 to 800 times that to the general population. Thus, antimicrobial prophylaxis is recommended for close contacts of cases, including household members, daycare center contacts, and anyone directly exposed to the patient's oral secretions. Chemoprophylaxis of healthcare workers is generally not indicated unless the worker has been exposed to the patient's respiratory secretions through mouth-to-mouth resuscitation, endotracheal intubation, or care. Because the attack rate of meningitis in contacts of cases is highest during the first few days after onset of disease in the index case, chemoprophylaxis should be administered to appropriate contacts as soon as possible; ideally within 24 hours after identifying a case. Chemoprophylaxis is not indicated for otherwise healthy individuals colonized with *N. meningitidis*.

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There are currently two licensed meningococcal vaccines available in the US, a polysaccharide vaccine (MPSV4 or Menomune) and a conjugate vaccine, or polysaccharide vaccine conjugated to diphtheria toxoid, (MCV4, Menactra) which was FDA licensed in 2005. Both are quadrivalent, contain *N. meningitidis* serogroups A, C, Y, and W-135 capsular antigens, and are administered as a single 0.5 ml injection. The newer conjugate vaccine (MCV4, Menactra) is licensed for use in persons aged 11 to 55 years, and is the preferred vaccine for this age group. The conjugate vaccine provides a longer lasting immunity and is expected to reduce asymptomatic nasopharyngeal carriage and produce herd immunity. The older polysaccharide vaccine is recommended for the 2 to 10 and over 55 age groups, or when the conjugate vaccine is unavailable.

Routine vaccination against meningococcal disease is recommended for persons aged 11 to 12 years of age. Those entering high school and college freshman living in dormitories who have not previously received the conjugate vaccine should also be vaccinated.

A previous shortage of the newer conjugate vaccine (MCV4, Menactra) is now resolved and recommendations to defer vaccination are no longer in effect. Routine vaccination also is recommended for other populations at increased risk for meningococcal disease, including military recruits, microbiologists routinely exposed to *N. meningitidis*, persons who travel or reside in countries where *N. meningitidis* is hyper endemic or epidemic, with terminal complement component deficiencies, and functional or anatomic asplenia.

The polysaccharide vaccine does not induce protective immunity in children aged less than two years, a group at the highest risk for disease. The newer conjugate vaccine is not licensed for those aged less than 11 years; thus routine vaccination is not recommended for younger age groups.

Physicians and other healthcare providers are urged to educate parents and patients about meningococcal disease and the benefits and risks of vaccination as relevant to their individual situations.

Maintaining a high level of suspicion for meningococcal meningitis and immediately initiating antibiotic therapy in suspect cases is critical. Treatment of suspected cases of bacterial meningitis is a medical emergency and should be initiated immediately. Ideally, a lumbar puncture to obtain cerebrospinal fluid for culture and analysis should be performed prior to the administration of antibiotics. However, antibiotic administration should not be delayed in critically ill patients or if the lumbar puncture cannot be performed expeditiously.

In infants and children, adjunctive steroids (dexamethasone) should be administered 15 to 20 minutes prior to the first dose of antibiotics and continued for the first 2 to 4 days of antibiotic therapy. Studies have proven the benefits of corticosteroid in cases of pneumococcal, but not other types of meningitis in adults. Thus, there is currently no recommendation for the use of adjunctive dexamethasone therapy in adults for non-pneumococcal meningitis. It is imperative that the treatment of this fulminant and potential lethal infection not be delayed.

Healthcare providers are critical in the diagnosis and treatment of cases and the identification of contacts to prevent secondary cases. Healthcare providers are encouraged to report suspect or confirmed cases of meningococcal disease immediately to the Westchester County Department of Health at (914) 813-5159 or (914) 813-5000 after business hours. ♦