

Dr. Pelton – For: *Journal of Adolescent Health* Supplement

Title: Meningococcal Disease Awareness: Clinical and Epidemiological Factors Affecting Prevention and Management in Adolescents

From: Audio File

DR. PELTON: Meningococcal disease is an important cause of morbidity and mortality in the United States. Even in 2009, the case-fatality rate for meningococcal disease remains approximately 12 percent and has not changed in the last 10 to 15 years.

One of the reasons is that meningococcal disease is difficult to diagnose in its early stages. It isn't until the characteristic petechial rash is present that meningococcal disease is suspected. Unfortunately, often the cases will return with progression of disease to a point where medical intervention may be unsuccessful in restoring normal physiology and preventing a fatality.

Today, meningococcal disease is becoming less common. In 2009, there were approximately 1000 or 1200 cases in the United States with something approaching 150 deaths, and this is the lowest number of cases reported in the last 40 or 50 years. Yet meningococcal disease remains an important cause of fatalities in the US. And with the introduction of *Haemophilus influenzae* type b vaccine and pneumococcal conjugate vaccine, it is now the most common cause of bacterial meningitis in children and adolescents in the United States.

Five serogroups, A, B, C, Y, and W-135, cause virtually all of the cases in this country and throughout the world. A is unusual in the United States but causes outbreaks in the meningitis belt in Africa, as well as is widespread in China and other parts of Asia.

Meningococcal disease represents a life-long threat, although the highest incidence of disease occurs in the first year of life where the incidence may be 10 times what it is later in life. There's a second peak of disease in adolescents, and then a peak of disease in the over 50 or 60 age cohorts.

Currently, about 70 percent of meningococcal disease is preventable with vaccines that are licensed or in phase III trials undergoing review for licensure. Unfortunately, in infants, serogroup B disease causes at least 50 percent of disease, and we do not have a vaccine for that at the moment.

The current recommendations are that adolescents age 11 to 18 years of age receive a single dose of meningococcal quadrivalent conjugate vaccine, that's vaccine that includes serogroups A, C, Y, and W-135.

As we look to the future, our goal is to extend immunization to prevent meningococcal disease across the population. One group will be adolescents. Currently, about 30 to 40 percent of adolescents have received meningococcal vaccine. However, we would like to see that at a much higher level, 80 or 90 percent of the population, so that we might be able to achieve herd benefit, or indirect protection, by reducing carriage of

meningococci in the adolescent population and therefore reducing transmission to other individuals within the population.

We'd also like to consider immunizing infants where the disease has a much higher incidence. However, as 50 percent of the disease is due to serogroup B, and vaccines currently available are less immunogenic in the first six to nine or 12 months of life, we still need better formulations before we venture into the infant age group for an immunization program.

I think the future holds the development of both more immunogenic vaccines and a serogroup B vaccine, and I think that the potential for preventing meningococcal disease across the entire population in the United States is large and will move forward. However, I want to remind us now that we can begin to make further impacts by making sure that adolescents have received meningococcal quadrivalent vaccine, as this is an important benefit for the adolescent where there is a significant rate of disease that is vaccine preventable and a significant case-fatality rate, as well as potentially advantageous to the rest of the population by reducing carriage in adolescents and, therefore, transmission to other individuals that they come in contact with.