NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Mary T. Bassett, M.D., M.P.H.
Commissioner

2017 ALERT #36

Recognizing Invasive Meningococcal Disease in an Era of Declining Incidence

Please Share this Alert with All Emergency Medicine, Family Medicine, Primary Care Physicians, Infectious Disease, and Internal Medicine Staff in Your Facility

- The incidence of invasive meningococcal disease (IMD) in New York City has steadily declined over the last decade, however, the case fatality rate has increased during the same time period
- The IMD case fatality rate for the years 2000-2009 was 17% compared to 23% for the years 2010-2016
- Since 2008 females with IMD (15 years and older) in NYC have died at twice the rate of males (37% vs. 19%).

October 3, 2017

Dear Providers,

Invasive meningococcal disease (IMD) is a rare but serious bacterial infection caused by the gram-negative bacterium *Neisseria meningitidis*. Although the NYC incidence of IMD has declined since 2000 from 0.6/100,000 to 0.1/100,000, the case fatality rate has increased from 17% for the years 2000-2009 to 23% for the years 2010-2016 (national estimate for 2008-2015 is 15%). Meningitis is the most common presentation of IMD, however, other presentations include uncomplicated bacteremia, pneumonia, septic arthritis and meningococcemia. Patients may present with one or more IMD syndromes, and the highest risk of death is from meningococcemia. Progression to meningococcemia is often abrupt and is characterized by hypotension, tachycardia, tachypnea, petechial rash or purpura, altered mental status, thrombocytopenia, and leukopenia. Death may occur within hours of onset.

Surveillance data from 2008-2016 reveal that NYC female IMD patients (ages 15 and older) have twice the risk of dying from IMD compared to males. The association remains when controlling for age, pre-existing medical conditions, and the time from onset to hospitalization. Survival probability in females diverged from males beginning on day three of hospitalization. Females presenting with an altered mental status are especially at risk for a fatal outcome from IMD.

With declining incidence of IMD, it is imperative that providers maintain a high index of suspicion for IMD and promptly implement antibiotic and resuscitative therapy. Up to 30% of IMD patients will have negative cultures, therefore, it is imperative that providers think of IMD and report promptly to the health department so we may arrange PCR testing at the Wadsworth Center State Laboratory.

Whereas the signs and symptoms of meningitis are readily identifiable, early meningococcemia may be subtle and difficult to recognize in a patient who does not appear septic. The following clinical and laboratory clues may aid in suspecting the diagnosis:

- Petechiae particularly on areas of skin pressure zones, the palms, and the soles or the conjunctiva and pharynx
- Severe muscle or abdominal pain unexplained by an alternative etiology
- Serial vital signs showing worsening (or unremitting) tachycardia, tachypnea or hypotension despite treatment
- Low peripheral white blood cell count (< 5,000/mm^3) with predominance of neutrophils
- Borderline or low platelet count (<150,000/mm^3)
- Elevated serum lactate
- Borderline or low serum potassium

While any single finding does not necessarily suggest IMD, the constellation of findings in a febrile patient warrants closer scrutiny and consideration of empiric antibiotic therapy while awaiting confirmatory laboratory test results. Serial vital signs and examinations are critical to assuring that meningococcal infection is recognized and promptly treated. Antibiotic treatment should not be delayed to obtain diagnostic specimens. The Health Department is available during business and after hours for consultation and will arrange for PCR testing of blood, cerebrospinal, joint and pleural fluid at the New York State Wadsworth Center. **Notifying the Health Department about suspect and confirmed cases is critical to preventing secondary transmission.**

Report immediately both suspect and confirmed IMD cases to the Health Department by telephone. To report a suspect or confirmed IMD case and for information about IMD and vaccination, please call 866-NYC-DOH1 (1-866-692-3641)

We greatly appreciate your assistance.

Sincerely,

Don Weiss, MD, MPH
Director of Surveillance
Bureau of Communicable Disease

Marcelle Layton, MD
Assistant Commissioner
Bureau of Communicable Disease