Committee: Infectious

Title: Revision of the National Surveillance Case Definition for Meningococcal Disease

05-ID-05

Statement of the Problem:
Improved laboratory methods for identifying infections caused by *Neisseria meningitidis* necessitate revision of the National Surveillance Case Definition for Meningococcal Disease. CSTE has previously called upon states to conduct laboratory-based surveillance for Neisseria meningitidis (1) and to collect all *N. meningitidis* isolates from normally sterile sites to determine the serogroup (2). A quadrivalent, conjugate meningococcal vaccine has been licensed for use in the United States. Monitoring the impact of the vaccine on meningococcal disease will require enhanced efforts to collect surveillance data that include the serogroup of each isolate.

Background and Justification:
Approximately 2400-3000 cases of meningococcal disease occur each year in the United States, of which 3% are associated with outbreaks. There are 13 serogroups of N. meningitidis; five serogroups (A, B, C, W-135, and Y) are responsible for the vast majority of human cases worldwide. A conjugate vaccine that protects against four serogroups (A, C, W-135, and Y) was licensed in the United States January 2005 for use in adolescents and adults ages 11-55. There is no immediate prospect of a vaccine effective against serogroup B which causes approximately one quarter of cases in the U.S. Monitoring the impact of the new vaccine on meningococcal disease will require surveillance data that permits vaccine-preventable disease caused by serogroups A, C, Y, and W-135 to be differentiated from non-vaccine-preventable disease caused by other serogroups. In addition to helping measure the impact of the new conjugate vaccines, serogroup information also helps to determine the linkage between cases and the options for public health response should a cluster occur. Making the serogroup part of the routine case report at local, state, and national levels will provide data essential for assessing the impact of the new vaccine and for making policy decisions regarding its use.

Statement of the desired action(s) to be taken:
To include new laboratory methods in the national surveillance case definition for meningococcal disease and to encourage clinical laboratories to either perform serogroup testing or to forward clinical specimens to the public health laboratory for serogroup testing. The results of serogroup testing should also be reported to the appropriate public health authorities.

Goals of Surveillance:
1. To detect and track outbreaks of meningococcal disease so that appropriate control measures can be promptly instituted.
2. To assess changes in the epidemiology of meningococcal disease over time to permit the most efficient allocation of resources and the formulation of the most effective disease control and prevention policies.

Methods for Surveillance:
Invasive cases of disease caused by N. meningitidis confirmed by culture of the organism from a normally sterile site are already reported through NETSS.

Case Definition:
Case definitions for meningococcal disease
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Meningococcal Disease Clinical Description

Meningococcal disease manifests most commonly as meningitis and/or meningococcemia that may progress rapidly to purpura fulminans, shock, and death. However, other manifestations might be observed.
Case classification
Confirmed: a clinically compatible case plus

- isolation of *Neisseria meningitidis* from a normally sterile site (e.g., blood or cerebrospinal fluid {CSF} or, less commonly, synovial, pleural, or pericardial fluid) or skin scrapings of purpuric lesions

Probable: a clinically compatible case plus

- evidence of *N. meningitidis* DNA using a validated polymerase chain reaction (PCR), obtained from a normally sterile site (e.g,. blood or CSF) [3]
- evidence of *N. meningitidis* antigen by immunohistochemistry (IHC) on formalin-fixed tissue or latex agglutination of CSF[4,5]

Suspect:

- clinical purpura fulminans in the absence of a positive blood culture
- a clinically compatible case with gram negative diplococci from a normally sterile site (e.g., blood or CSF)

[1] CSTE Position Statement 1986-19. Laboratory Based Surveillance *of Listeria moncytogenes b, Neisseria meningitities* and Group B Streptococci. Available at http://www.cste.org/ps/1986/1986-19.htm.

[2] CSTE Position Statement 1994-18. Meningococcal Disease Serogrouping and Vaccine Evaluation. Available at http://www.cste.org/ps/1994/1994-18.htm.

[3] Mothershed EA, Sacchi CT, Whitney AM, Barnett GA, Ajello GW, Schmink S, Mayer LW, Phelan M, Taylor TH Jr, Bernhardt SA, Rosenstein NE, Popovic T. 2004. Use of real-time PCR to resolve slide agglutination discrepancies in serogroup identification of *Neisseria meningitidis*. *J Clin Microbiol* 42:320-328.

[4]Guarner J. Greer PW. Whitney A. Shieh WJ. Fischer M. White EH. Carlone GM. Stephens DS. Popovic T. Zaki SR. Pathogenesis and diagnosis of human meningococcal disease using immunohistochemical and PCR assays; *American Journal of Clinical Pathology. 122(5):754-64, 2004 Nov.*

[5] Positive antigen test results from urine or serum samples are unreliable for diagnosing meningococcal disease.

Period of Surveillance:
Ongoing
Coordination:
Agencies for Response:
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