Neonatal herpes simplex virus (nHSV) infection is a rare but potentially devastating disease in some U.S. jurisdictions, and in the absence of national surveillance systems for nHSV in 2008, the Neonatal Herpes Simplex Virus Surveillance Working Group was formed. Since its inception, the Working Group has developed standards that can be used by public health agencies to establish or enhance existing nHSV surveillance. Use of these standards will improve understanding of the incidence of this disease and its risk factors, as well as identify opportunities for prevention, diagnosis and treatment.

Background

Neonatal herpes simplex virus (nHSV) infection is typically acquired following exposure to HSV in the maternal genital tract during delivery. Infection can also occur in utero as well as postnatally, such as following exposure to an adult with an oral-oral or oral-genital infection. Both HSV-1 and HSV-2 can cause nHSV. In the past, the majority of genital HSV infections were type 2, in younger women and certain populations the incidence of genital HSV-1 infections is increasing (1-3), and the proportion of HSV infections from HSV-1 is estimated to be as high as 30 to 50% (4). The risk of vertical transmission is significantly higher among women who acquire genital HSV infection during pregnancy than among women with long-standing genital infections in whom the virus is eradicated or latent.

In the literature, clinically recognized nHSV infections are often classified as: 1) localized infection of the skin, eyes, and/or mouth (SEMV disease); 2) infection of the central nervous system (CNS disease), with or without SEMV disease; or 3) disseminated disease involving multiple organs such as the liver, lungs, and/or without SEMV or CNS disease (4,6). Although the mortality rate among untreated infants with central nervous system (CNS) disease or disseminated disease is 50% to 85% (7), those who survive, even with antiviral treatment, often suffer neurologic impairment depending on the extent of disease. In a number of experts in the field have recently called for nHSV to become a nationally notifiable condition, in part to address this gap as well as to monitor trends in disease rates, improve understanding of prevention and treatment efforts, and improve awareness of this disease among providers (18-21).

A study conducted in 2005 determined that 9 states included nHSV infection among their list of reportable diseases (17). However, this assessment noted a lack of a standard case definition for surveillance and under-reporting of cases in most jurisdictions. In 2007, CSTE, in partnership with the Centers for Disease Control and Prevention (CDC) and the National Coalition of STD Directors (NCSTD), convened an expert panel to discuss nHSV surveillance. The expert panel developed a case definition for surveillance purposes and recommended that nHSV be added to the CSTE list of nationally notifiable diseases. Although CSTE did not add this to the list of nationally notifiable diseases, CSTE and CDC developed a strategy whereby those jurisdictions where nHSV is a reportable disease would be contacted to assess their willingness to adopt the case definition and consider other options for improving surveillance efforts. Use of this strategy was seen as a means whereby jurisdictions could improve nHSV surveillance and data quality, and inform future efforts.

Objectives

- Develop a standard list of clinical, laboratory and epidemiological data elements
- Unintended potential public health benefits of surveillance, including:
  - Determine the incidence of nHSV infection, including regional variations
  - Examine opportunities for prevention
  - Improve provider knowledge regarding disease recognition and management
  - Establish baseline data to monitor the impact of any future interventions, such as an nHSV vaccine
  - Identify and respond to disease clusters
  - Examine the understanding of the natural history of nHSV infection

- Examples of other accomplishments of members of the Working Group:
  - New York City and Connecticut actively work with providers and laboratories to facilitate the identification and reporting of cases, and actively investigate all case reports to collect information on the full set of standard data elements.
  - Examine opportunities for prevention
  - Establish baseline data to monitor the impact of any future interventions, such as an nHSV vaccine
  - Identify and respond to disease clusters
  - Examine the understanding of the natural history of nHSV infection

- Develop a standard case definition for nHSV surveillance

- Develop a standard list of clinical, laboratory and epidemiological data elements

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Methods

In 2008, representatives from those jurisdictions that had nHSV infection as a reportable condition were invited to participate in a conference call, and in April the first meeting of the Working Group, which also included representatives from CSTE and CDC, was held. In the two years since, the Working Group has continued to meet with the goal of developing standard methods to conduct nHSV surveillance. Additional jurisdictions have joined the Working Group, including those that are considering development of retrospective medical chart review activities to collect data on HSV infections in select hospitals in Chicago.

Rationale

- The Working Group has accomplished the following:
  - Developed a standard list of clinical, laboratory and epidemiological data elements
  - Unintended potential public health benefits of surveillance, including:
    - Determine the incidence of nHSV infection, including regional variations
    - Examine opportunities for prevention
    - Improve provider knowledge regarding disease recognition and management
    - Establish baseline data to monitor the impact of any future interventions, such as an nHSV vaccine
    - Identify and respond to disease clusters
    - Examine the understanding of the natural history of nHSV infection
  - Examples of other accomplishments of members of the Working Group:
    - New York City and Connecticut actively work with providers and laboratories to facilitate the identification and reporting of cases, and actively investigate all case reports to collect information on the full set of standard data elements.