

# Neonatal Herpes Surveillance

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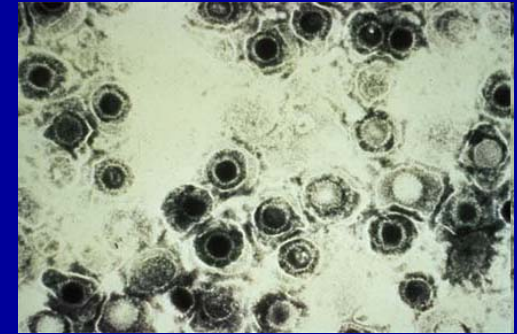
San Francisco Department of Public Health

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# Herpes Simplex Virus



- Common in the United States
  - At least 50 million people in the US have a genital herpes simplex virus (HSV) infection.
- HSV-2 causes approximately 80% of all genital herpes cases in women
  - Around 1 in 4 women have a genital HSV-2 infection
- Neonatal herpes (nHSV) is the most serious sequelae of genital herpes

# HSV in Pregnancy

- More potential for adverse outcomes with primary infection than first, non-primary (antibody to type 1, new acquisition type 2 and vice versa) or recurrent infections
  - Increased risk for preterm labor
  - Increased risk of HSV transmission to neonate
    - Larger quantities of virus replicating in genital tract
    - Extensive cervical involvement
    - Lack of maternal antibody
    - Infant may be immunologically immature

# Neonatal Herpes Acquisition

- Frequency and severity of HSV recurrences may increase over the course of pregnancy
- Congenital and intrapartum transmission of nHSV have been described
  - Almost all cases of nHSV perinatally acquired
    - ~85% of nHSV infection acquired from exposure to HSV in birth canal
    - ~10% acquired through exposure to other sources of HSV
    - ~5% occur after transplacental infection
  - Infant acquires infection at time of delivery through contact with HSV-infected genital secretions
- Duration of ruptured membranes a risk factor for acquisition

# Risk of Transmission

- Women who acquire genital herpes near time of delivery:
  - Risk of transmission to the neonate is 30-50%.
- Women with a history of recurrent herpes at term or who acquire HSV during the first half of pregnancy:
  - Risk of transmission  $< 1\%$ .

# Risk of Transmission

- Recurrent genital herpes much more likely than acquisition during late pregnancy.
- Therefore the proportion of nHSV infections from women with recurrent HSV is substantial.
- Up to 80% of nHSV cases are born to mothers without symptoms or a known history of genital herpes

# Neonatal Herpes

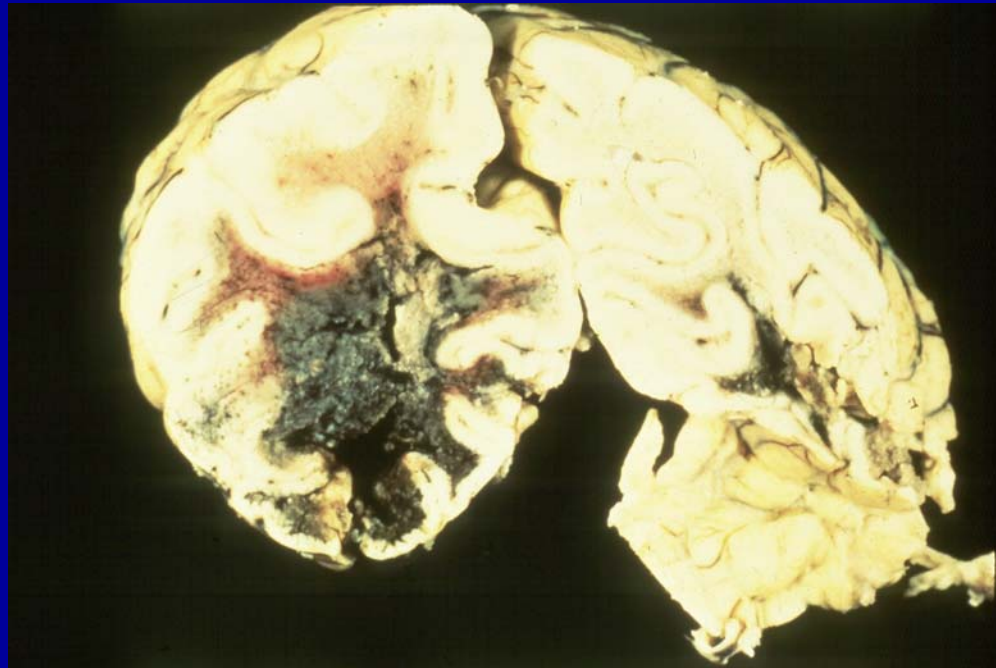
- Most develop signs of infection in second week of life
- 3 Forms
  - Skin, Eye and/or Mouth (SEM) Disease (~40%)
  - Central Nervous System (CNS) Disease (~35%)
  - Disseminated Disease (~25%)
- Associated with high morbidity and mortality even with treatment

# Neonatal Herpes





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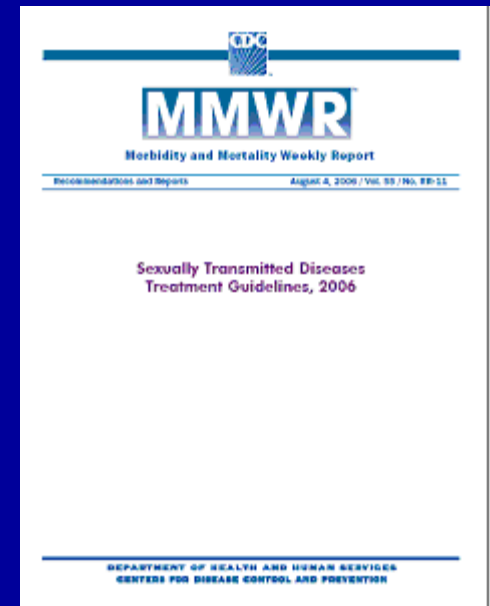


# Neonatal Herpes Prevention

- Prevent acquisition of genital HSV during late pregnancy
- Avoid exposure of the infant to herpetic lesions at delivery
  - Caesarian section
  - Universal, type-specific rapid diagnostic testing at delivery
  - Other, yet to be discovered/proposed method
- Type-specific serological testing at 34 weeks and, if positive, antiviral therapy at or beyond 36 weeks of gestational age.

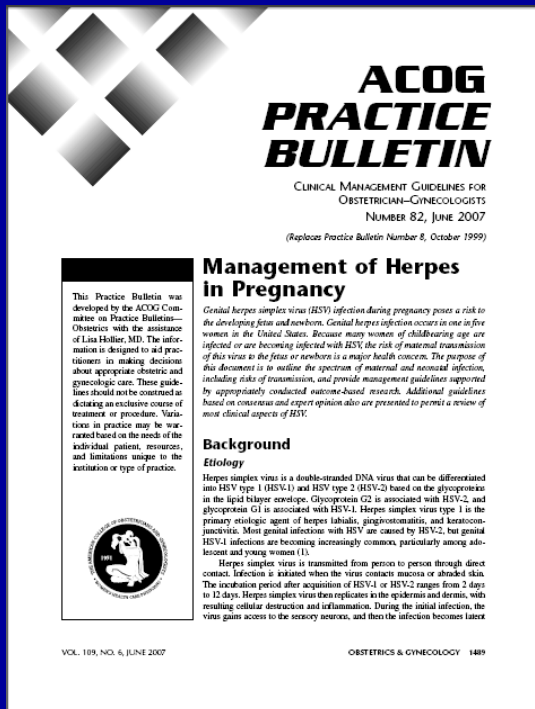
# CDC Guidelines

- All pregnant women should be asked about HSV history
- All women without known genital herpes should be counseled to avoid exposure to HSV
- Type specific serologic tests should be offered to women with genital herpes whose sex partner has HSV infection
- At onset of labor, all women should be carefully examined for herpetic lesions and symptoms of herpes



# American College of Obstetricians and Gynecologists (ACOG) Guidelines

- All women should be asked in early pregnancy about history of herpes and symptoms
- All women with active genital herpes should be offered anti-viral therapy at or beyond 36 weeks of gestation
- Women should be examined for herpetic lesions when presenting for evaluation in labor or delivery
- Caesarean delivery is indicated in women with active genital lesions or prodromal symptoms near the time of delivery



# California Guidelines

- Asymptomatic pregnant women with partners who have a known genital HSV-2 infection should be screened
- HIV-infected pregnant women should be offered HSV type-specific serologic testing



# Current Neonatal Herpes Surveillance

- Currently reportable in 10 states – CT, DE, FL, LA, MA, NE, NY, OH, SD, WA
  - However, there is no standardized case definition
- In 2007, it was recommended by a CSTE/CDC working group that neonatal herpes be made a reportable condition in the United States.
  - Current working group in place to develop standardized case definition and reporting



# Neonatal Herpes Estimates

- Varying estimates in incidence rates
  - Whitley *et al.*: 76.2/100,000 live births
  - Xu *et al.*: 12.9/100,000 live births
  - Dinh *et al.*: 4/100,000 live births
- In California,
  - Morris *et al.* used hospital discharge and mortality data
  - Incidence rate: 12.1 per 100,000 live births
  - Approximately 570,000 births per year in California
  - Estimated 70 cases per year
  - Range: 20-400 cases per year

# Benefits of a Surveillance System

- Measure true burden of disease
  - Population estimates are currently limited
  - Rely on research studies
  - Hospital data
- Monitor trends
  - Effectiveness of intervention strategies on burden of disease
  - Measure impact of potential vaccine

# Benefits of a Surveillance System

- Identify outbreaks/clusters
  - Cluster in NYC associated with ritual genital circumcision
- Identify high-risk populations
  - Allow for focused and more cost-effective prevention campaigns
  - Reduce unnecessary caesarian deliveries

# Benefits of a Surveillance System

- Pursue case investigations
  - Ensure adequate treatment was provided
  - Identify missed opportunities in prevention
  - Estimates of disease are small
    - Would require limited resources for each county
- Link cases with expert care
  - University-based consultation
  - Optimize clinical management

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