CD Summary

December 3, 2002
Vol. 51, No. 25

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AN EPIDEMIOLOGY PUBLICATION OF THE OREGON DEPARTMENT OF HUMAN SERVICES

PREVENTION OF NEONATAL GROUP B STREP INFECTION—THE JURY IS IN

SINCE THE group B streptococcus (GBS; *Streptococcus agalactiae*) attained notoriety in the 1970s as the leading cause of neonatal sepsis in the United States, significant strides have been made in prevention. Risk factors for disease were identified and efficacy of intrapartum antibiotic prophylaxis (IAP) demonstrated. Guidelines published in 1996 presented clinicians with two prevention options.[1] Option A called for prenatal vaginal and rectal GBS screening cultures at 35–37 weeks with IAP for colonized moms as well as for those with premature labor onset or rupture of membranes (ROM), fever ⩾38°C, or ROM ⩾18 hours before delivery. Option B recommended IAP based on risk factors alone, e.g., women delivering at <37 weeks gestation, with ROM ⩾18 hours, or temperature ⩾38°C.

But which option was better? In this *CD Summary* we review early-onset GBS disease and newly published prevention guidelines.

THE PROBLEM

GBS is a Gram-positive coccus that frequents the human gastrointestinal tract and can colonize the genitourinary tract. Surveys show that 10%–30% of asymptomatic pregnant women have vaginal or rectal colonization with GBS.[2-4] Exposure of newborns at parturition can lead to sepsis — usually bacteremia, pneumonia, or meningitis, with cellulitis or septic arthritis less commonly seen. Infant disease is classified as early-onset (within the first 7 days of life) or late-onset (>7 days to 3 months of age). Risk factors for early-onset disease include a colonized or infected mother, premature or prolonged ROM, premature labor onset, intrapartum fever, GBS bacteriuria, a previous newborn with GBS disease, black race, or maternal age <20 years.[5, 6] Penicillin G is the treatment of choice.

Although not reportable in Oregon, invasive GBS disease has been surveilled in the Portland area since July 1995 as part of the Emerging Infections Program collaboration among the CDC and health departments in 8 other states.[7] Oregon's surveillance area is Clackamas, Multnomah, and Washington counties (2001 population 1,467,300; 42% of Oregonians). Isolation of GBS from a normally sterile site (blood, cerebrospinal, pleural, peritoneal, pericardial or joint fluid, or other specimens collected during sterile procedures) defines invasive infection. Area microbiologists identify and forward isolates to the Oregon State Public Health Lab. Health information is reviewed for demographic and clinical details.

From July 1995 through 2001, 75 cases of early-onset GBS disease were reported — an incidence of 0.6/1000 live births. Fifty-four cases (72%) had primary bacteremia, 16 (21%) bacteremic pneumonia and 7 (11%) meningitis. (Several had more than one syndrome.) Twenty-eight (38%) of 72 cases with gestational age available were born at ⩾37 weeks. One case died.*

NEW PREVENTION DATA

Most of this disease occurred in the context of the 1996 prevention recommendations, and the multi-state surveillance afforded an opportunity to observe disease rates under both the screening and risk-factor prevention options. CDC and 8 states conducting active surveillance for invasive GBS identified a stratified, random sample of live births in 1998 and 1999 — including 312 early-onset GBS cases — and reviewed the maternal records.[8]

Hands-down, the screening approach emerged as the better option. The risk of early-onset disease in infants of antenatally screened women was about *half* (relative risk in multivariable analysis

Revised guidelines — key features

Vaginal and rectal GBS screening cultures at 35–37 weeks gestation for ALL pregnant women (unless patient had GBS bacteriuria during the current pregnancy or a previous infant with invasive GBS disease)

Intrapartum prophylaxis indicated

- Previous infant with invasive GBS disease
- GBS bacteriuria during current pregnancy
- Positive GBS screening culture during current pregnancy (unless a planned cesarean delivery, in absence of labor or amniotic membrane rupture, is performed)
- Unknown GBS status (culture not done, incomplete, or results unknown) and any of the following:
  - Delivery at <37 weeks' gestation
  - Amniotic membrane rupture ⩾18 hours
  - Intrapartum temperature of ⩾38.0°C (⩾100.4°F)

Intrapartum prophylaxis not indicated

- Previous pregnancy with a positive GBS screening culture (unless a culture was also positive during the current pregnancy)
- Planned cesarean delivery performed in the absence of labor or membrane rupture (regardless of maternal GBS culture status)
- Negative vaginal and rectal GBS screening culture in late gestation during the current pregnancy, regardless of intrapartum risk factors

* See *http://www.healthoregon.org/acd/gbs/home.htm*

The **CD Summary** (ISSN 0744-7035) is published biweekly, free of charge, by the Oregon Dept. of Human Services, Office of Communicable Disease and Epidemiology, 800 NE Oregon St., Portland, OR 97232
Periodicals postage paid at Portland, Oregon.
Postmaster—send address changes to:
CD Summary, 800 NE Oregon St., Suite 730, Portland, OR 97232

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0.46; 95% confidence interval [CI] 0.36–0.60) that of infants managed by the risk-based approach. For women having an infant with early-onset disease, 62% lacked GBS disease risk factors that would have indicated IAP.

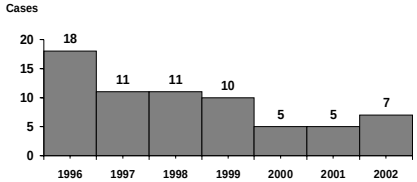
The efficacy of IAP against early-onset GBS disease in culture-positive women without risk factors was 89% (95% CI 66%–96%). Did screening cultures result in a higher percentage of women needing IAP? No. Following either strategy would have indicated IAP in 24% of moms. Notably, of the 8 sites, Oregon ranked 8th in proportion of women with prenatal screening documented — only 24% — so there is a real need for practice changes here.

Based on this study and others since 1996, universal prenatal GBS screening is now recommended.[9] The algorithm (*verso*) summarizes recommendations for IAP.

This is a complex topic and we do not have space for a comprehensive review. The reader is referred to the published guidelines for related topics such as proper collection, transport and culture of rectal and vaginal specimens for prenatal GBS screening; IAP in women threatening pre-term delivery; choice of antimicrobial agent in penicillin-allergic women; and management of newborns after IAP.[9]

Over the past decade, increasing use of IAP has resulted in decline of >70% in early-onset GBS disease — from 1.8 to 0.5 cases per 1,000 live births.[10-12] A similar trend has been been observed in the Oregon surveillance area. Because Oregon had the lowest rate of GBS screening of the 8 states in the study, we expect that adoption of the revised guideline will lead to further reductions in this disease without significant increases in IAP.

Early-onset invasive GBS disease, Portland tri-county area, January 1996–November 2002



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INFLUENZA INVADES OREGON

ONE CULTURE-CONFIRMED case of influenza type A has been reported by the Oregon State Public Health Laboratory (OSPHL). The teen resident of Yamhill County relinquished a specimen of putative epidemic catarrh during the second week in November, and subsequent culture of influenza virus caused a ripple of excitement among the virologists in attendance. As of the 9th week of the season, OSPHL has reported results on 18 cultures compared with 51 last season. Also, specimens received to R/O influenza are currently lagging behind with 26 compared with 72. It is anticipated that barring a viral shift, this season will be at or below average. In spite of this, immunizations are still important for those at risk of complications as well as those who interact with immunocompromised patients, friends or loved ones during the holiday season and beyond. In addition to the influenza virus, OSPHL and Providence Portland Medical Center Infectious Disease Laboratory have isolated adenovirus (1), parainfluenza virus (5), rhinovirus (1), and RSV (1).

Nationally, 47 isolates tested by the Centers for Disease Control and Prevention were identified as type A (43%) and B (57%) strains. Current strains are antigenically similar to the vaccine components.