

## Streptococcus Group B

*Invasive disease caused by Streptococcus Group B is a Class C Disease condition and must be reported to the state within five business days.*

Group B Streptococcus, or *Streptococcus agalactiae*, is a gram-positive bacterium that causes invasive disease primarily in infants, pregnant women and older adults, with the highest incidence among young infants. Invasive GBS infections may manifest as any of several clinical syndromes including lower respiratory tract infections, pneumonia, bacteremia, meningitis and sepsis.

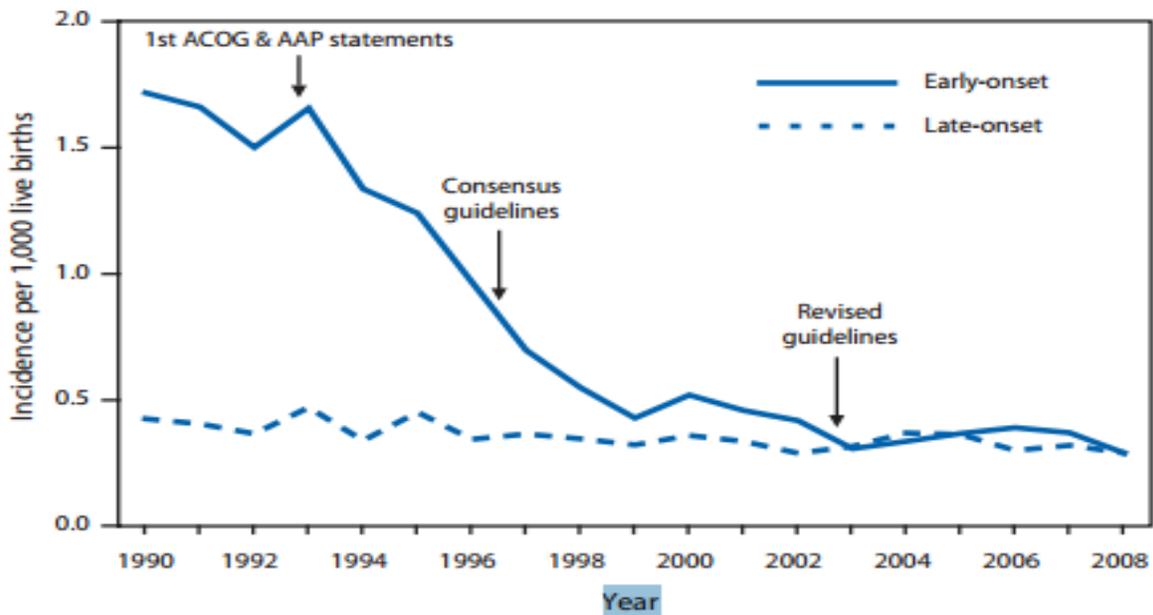
Isolation of group B Streptococcus (*Streptococcus agalactiae*) by culture from a normally sterile site (e.g., blood or cerebrospinal fluid, or less commonly, joint, pleural or pericardial fluid) is required for confirmed case classification.

### History of Incidence and Recommendations

In the 1970s, the bacterium group B Streptococcus (GBS) emerged as the leading infectious cause of early neonatal morbidity and mortality in the United States. Initial case series reported case-fatality ratios as high as 50%. Clinical trials and observational studies conducted in the 1980s showed that the use of intravenous antibiotics during labor for women at risk of transmitting GBS to their newborns could prevent invasive disease in the first week of life. Recommendations for intra-partum prophylaxis to prevent perinatal GBS disease were issued in 1996 by the American College of Obstetricians and Gynecologists.

Revised guidelines in 2002 recommended universal culture-based screening of all pregnant women at 35 to 37 weeks gestation to identify women who should receive prophylaxis. Further revisions were made in 2010 expanding recommendations on laboratory methods and updated algorithms for GBS screening for women with preterm labor. Before active prevention was initiated an estimated 7,500 cases of neonatal GBS occurred annually in the United States with about 100 cases in Louisiana. In recent years, GBS has caused approximately 1,200 cases of early-onset invasive disease per year among babies born at term ( $\geq 37$  weeks' gestation) in the United States and approximately 25 cases of early-onset invasive disease per year in Louisiana (Figure 1).

Figure 1: Incidence of early- and late-onset GBS disease, Active Bacterial Core Surveillance areas\* and activities for prevention of GBS disease – United States, 1990-2008



\*Active Bacterial Core surveillance (ABCs) is a core component of the Centers for Disease Control and Prevention's (CDC) Emerging Infections Programs network (EIP), collaboration between CDC, state health departments, and universities. ABCs is an active laboratory- and population-based surveillance system for invasive bacterial pathogens of public health importance.

Despite substantial progress in prevention of GBS disease since the 1990s, GBS remains the leading cause of early on-set neonatal sepsis in the United States. In Louisiana, from 1999 to 2010, a total of 811 neonates were diagnosed with GBS infection; of these, three died.

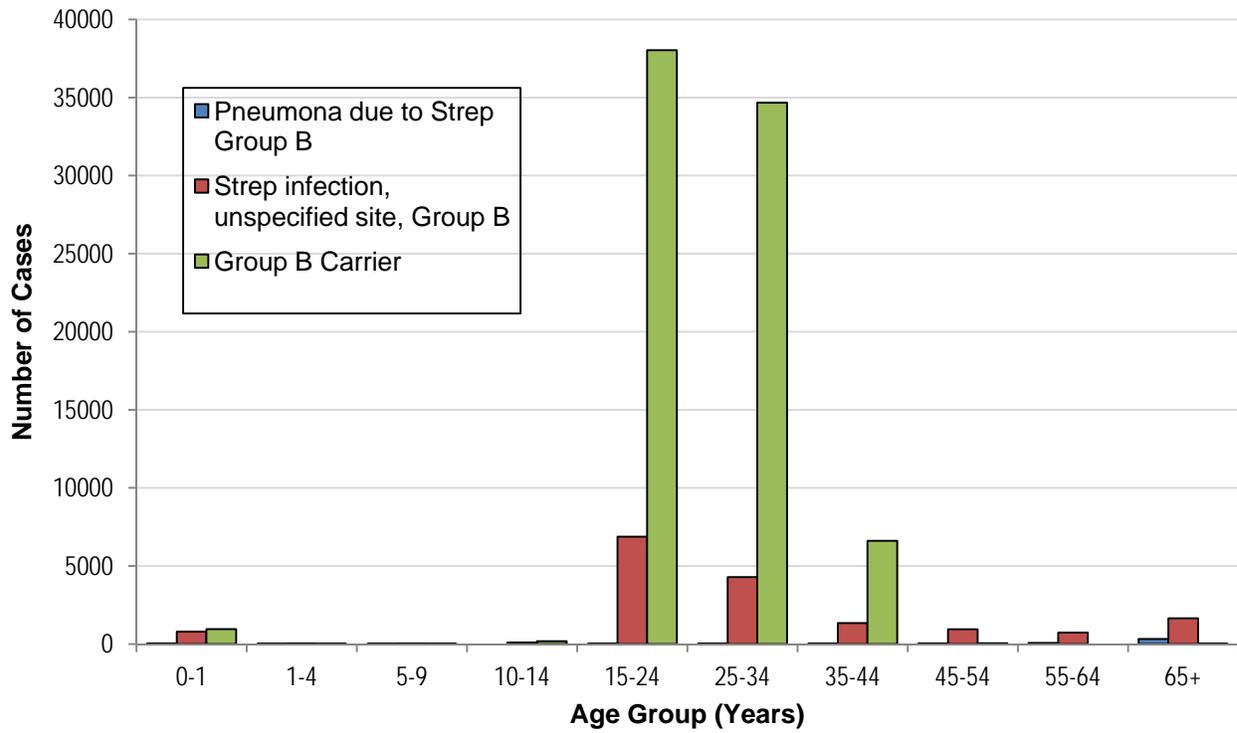
### LaHIDD Data

All patient cases from 1999 to 2010 with a diagnosis code representing a Streptococcal group B infection were extracted from the Louisiana Hospital Inpatient Discharge Database (LaHIDD) (Figure 2).

GBS infections included in the LaHIDD data extraction:

- Group B streptococcal carrier (ICD-9 code V02.51)
- Pneumonia due to streptococcus, group B (ICD-9 code 482.32) (non-carrier)
- Streptococcus infection in conditions classified elsewhere and of unspecified site, group B (ICD-9 code 041.02)

Figure 2: Cumulative diagnoses of GBS infection in hospitalized cases by age group  
Louisiana, 1999-2010

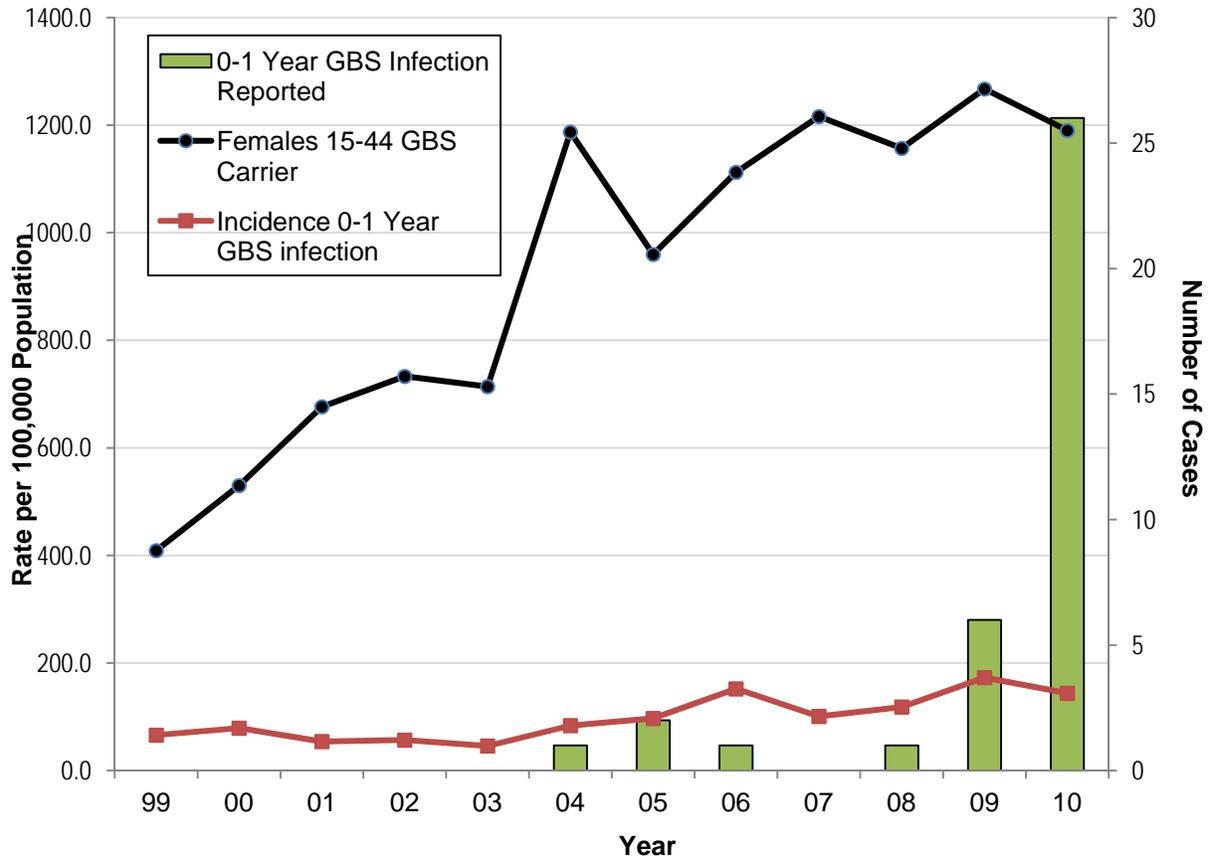


### GBS Colonization of Pregnant Women and Neonatal Disease

GBS is extremely prevalent in the general population but most cases present with a colonization and not infection. A pregnant woman colonized with GBS can transmit the bacteria to the child shortly before, or during delivery. Maternal intra-partum GBS colonization is the primary risk factor for early-onset disease in infants. Infections in newborns occurring within the first week of life are designated early-onset disease. Late-onset infections occur in infants older than one week of age, with most infections evident during the first three months of life.

In the years since 2001, the number of children under the age of one diagnosed with GBS infection has remained relatively low while the number of women of child-bearing age diagnosed as carriers has increased. The dramatic increase in women diagnosed as GBS carriers since 2001 is likely attributed to increased screening associated with the CDC's recommendations, issued in 2002 (Figure 3).

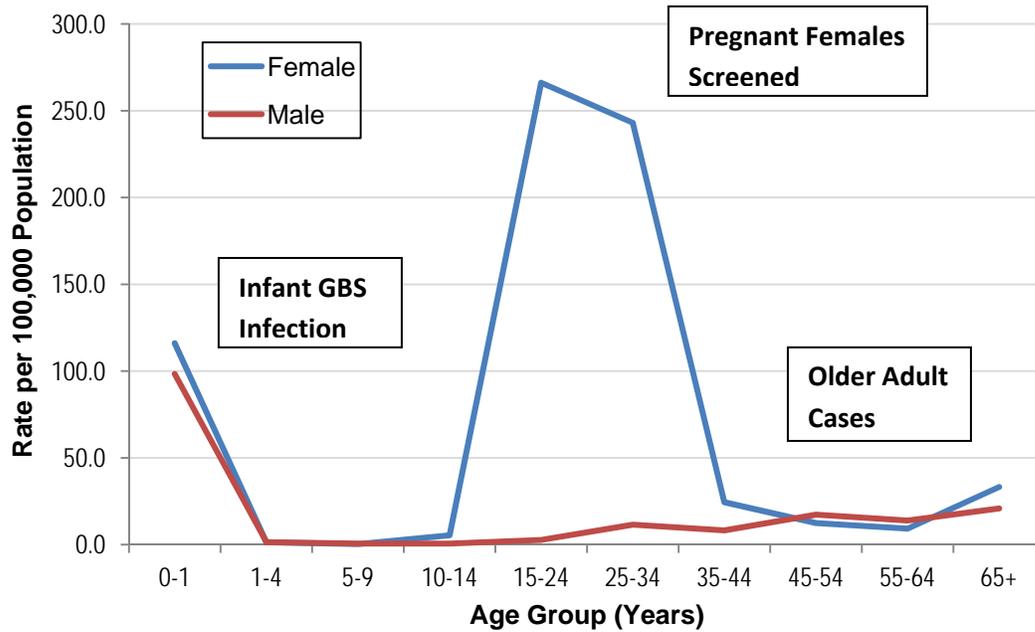
Figure 3: Hospitalization rate of females aged 15 to 44 years diagnosed as GBS carrier, rate of hospitalized infants younger than one year of age diagnosed with non-carrier GBS and the number of reported cases of infants younger than one year of age – Louisiana, 1999-2010



### Sex

Hospital discharge data was used to compare the incidence rates of streptococcal GBS in males and females. Average GBS rates of women of childbearing age (15 to 44 years) were significantly higher than those of men in the same age group. Females in the 15 to 24-year age group have the highest average rate of 228 per 100,000 population per year. (*\*Carriers of Group B Strep excluded from analysis.*) Rates for adults older than 45 years and children do not differ with respect to sex (Figure 4).

Figure 4: Average GBS hospitalization rate by sex and age group - Louisiana, 1999-2010\*

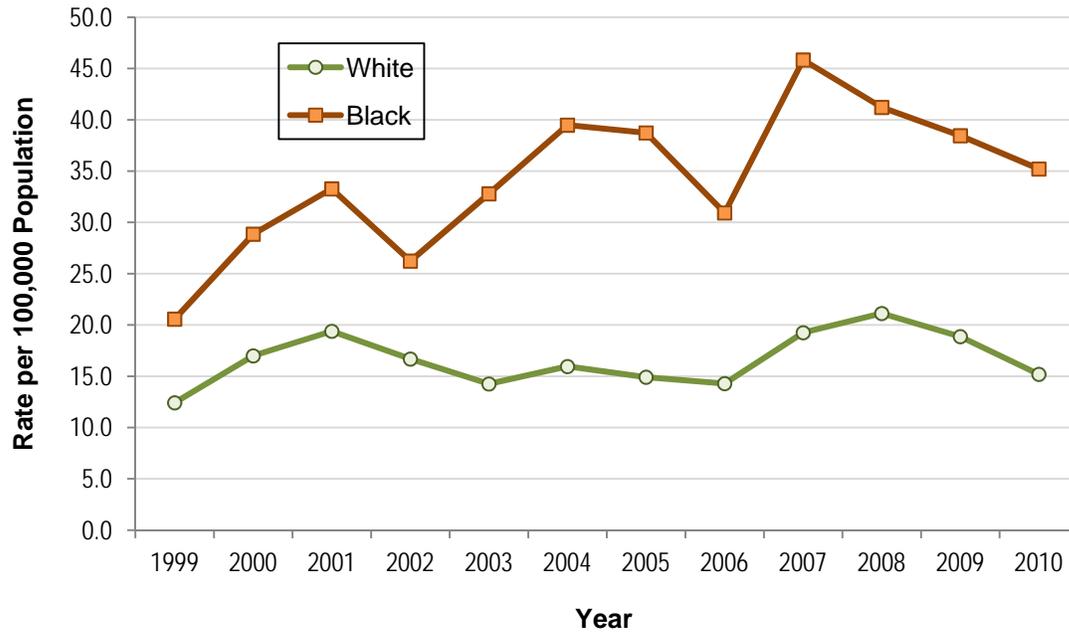


*\*Carriers of Group B Strep excluded from analysis*

**Race**

The race distribution shows a large discrepancy by race, with GBS rates in African-American hospitalized individuals being twice as high or greater as incidence rates for White hospitalized individuals. The average GBS rate during the 1999-2010 period for Whites is 17 per 100,000 population; the average GBS rate for African-Americans is 34 per 100,000 population (Figure 5).

Figure 5: GBS hospitalization incidence rates by race - Louisiana, 1999-2010



*\*Carriers of Group B Strep excluded from analysis*

### Other Streptococcus Group B Infections

Group B streptococcus can also cause systemic infections in non-pregnant adults with conditions such as diabetes mellitus, chronic liver or renal disease, malignancy or other immunocompromising conditions, and in adults 65 years of age and older. In general, these infections are easily treated with antibiotics and are rarely life-threatening.