

Antenatal Corticosteroid Use

What are antenatal corticosteroids?

Antenatal corticosteroids (ACS) are drugs recommended for pregnant women who are at risk of preterm delivery. Administration of ACS to a pregnant woman 24 to 48 hours prior to birth helps to mature the premature infant's organ systems, thus reducing the risk of mortality and morbidity due to prematurity.

Why is it important to measure antenatal corticosteroid use?

Antenatal corticosteroids have been demonstrated to decrease the premature newborn incidence of neonatal mortality and morbidity, especially respiratory distress syndrome, intraventricular hemorrhage, necrotizing enterocolitis, early onset infection, and neonatal intensive care unit admission.^{1,2} The American College of Obstetricians and Gynecologists (ACOG) recommends routine administration of a single course of ACS to pregnant women between 24 and 34 weeks of gestation who are at risk of preterm delivery within 7 days.^{3,4} A full course of ACS consists of two doses of 12 mg of intramuscular betamethasone 24 hours apart or four doses of 6 mg of intramuscular dexamethasone 12 hours apart.⁵ Recent research also demonstrates improved neonatal outcomes for newborns between 22 and 24⁶/₇ weeks, warranting an extension of the gestational range for ACS administration.⁶ Despite these recommendations, almost 1 in 4 neonates (23.1%) eligible for ACS administration still fail to receive them, especially those born in Level I and II hospitals and those born to vulnerable women (ie, Hispanic women and women >40 years).⁷⁻⁹

How is antenatal corticosteroid use measured?

The indicator ACS use is measured using birth certificate data linked to maternal and infant hospital records. This measure will only be reported for hospitals with more than 10 yearly births of very premature infants within the gestational age range. Reporting of ACS use will be done using the more conservative 24-to-31⁶/₇-week definition agreed upon by The Joint Commission (TJC), the National Quality Forum (NQF), and the Vermont-Oxford Network (VON), as well as the relatively newer definition of 23-33⁶/₇ weeks of gestation.

$$\text{ACS Use}_{(\text{Conservative})} = \frac{\text{Infants born between 24 and 31}^{\frac{6}{7}} \text{ weeks who received ACS}}{\text{All live births between 24 and 31}^{\frac{6}{7}} \text{ weeks}}$$

$$\text{ACS Use}_{(\text{Extended})} = \frac{\text{Infants born between 23 and 33}^{\frac{6}{7}} \text{ weeks who received ACS}}{\text{All live births between 23 and 33}^{\frac{6}{7}} \text{ weeks}}$$

What are the limitations with using birth certificate data linked to maternal and discharge hospital data to measure antenatal corticosteroid use?

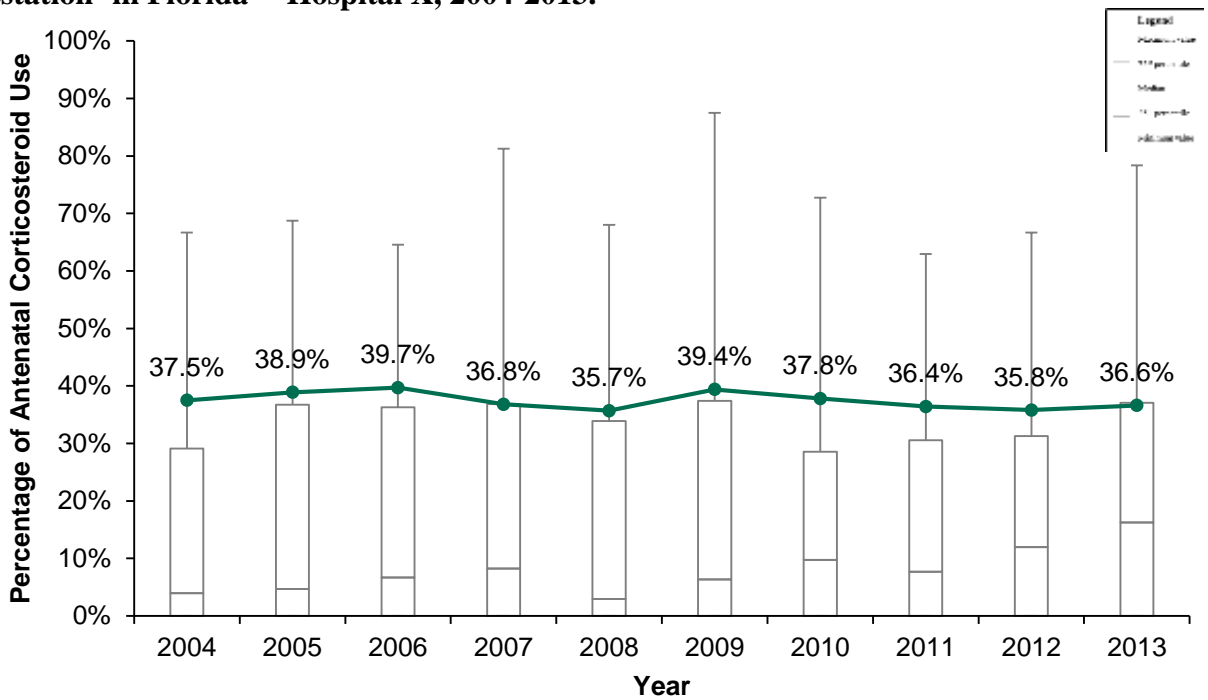
Birth certificate data makes it possible to compare rates of antenatal corticosteroid use among all hospitals in Florida. However, the quality of data reporting may vary substantially by hospitals. The reported percentages either reflect on clinical practice, the quality of hospital reporting, or both. Additionally, the dosing, number, type, and administration-to-delivery time of ACS use is not feasible using current birth certificate data. As shown in other states, it is also possible that ACS use may be underreported.^{9,10} Data quality improvement efforts in other states demonstrated substantial ability to improve the quality of data reporting on birth certificates.¹⁰

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How can we improve quality based on this indicator?

Special attention to this measure can result in substantial decreases in neonatal morbidity, mortality, and health care cost savings.⁵ The translation of this indicator into practice has been achieved through active, focused, quality improvement efforts.¹⁰ The California Perinatal Quality Care Collaborative model for improvement of this measure is based in the change agency principle and includes three components: 1) addressing the needs for predisposing strategies (eg, enlisting specialists), 2) using practice-enabling strategies (eg, training and implementation tools), and 3) using self-actualization feedback strategies.⁸ With this strategy in place, the clinical guidelines for antenatal corticosteroid use should be timely implemented, disseminated, enforced, sustained, and evaluated for quality improvement.

Figure 1. Rate of antenatal corticosteroid use among infants born at 23-33⁶ weeks of gestation^a in Florida^b - Hospital X, 2004-2013.

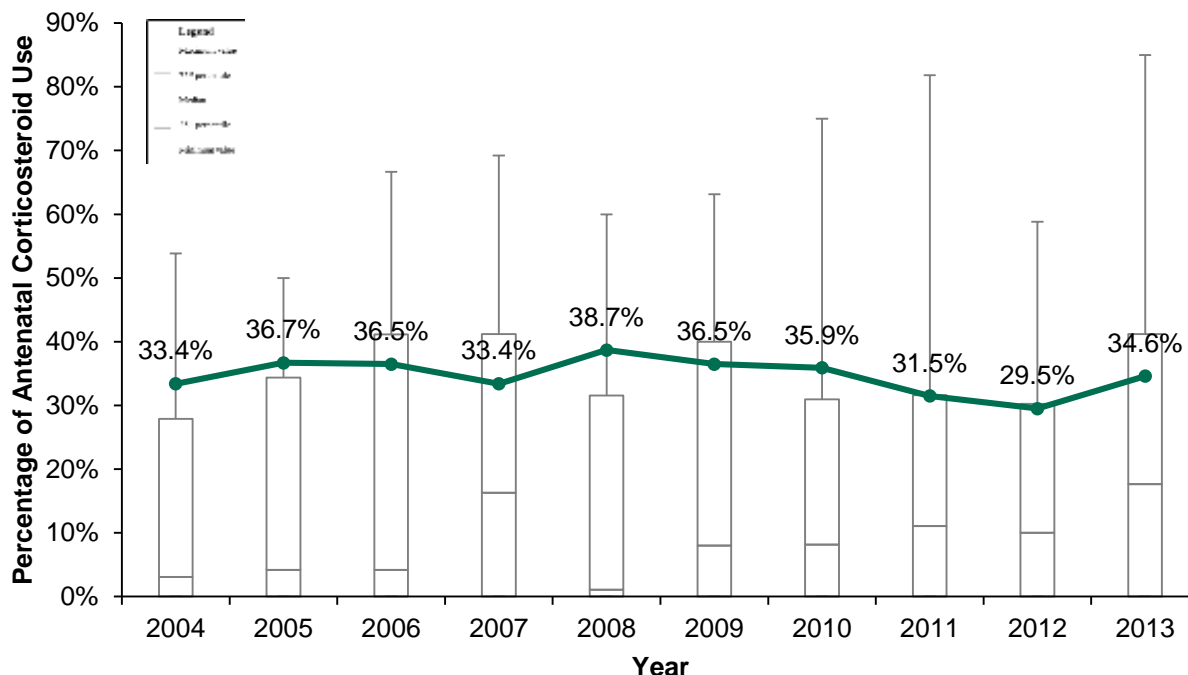


^aAs defined by the American College of Obstetricians and Gynecologists (ACOG).

^bCompared to same-level hospitals with more than 25 births of infants within this age range.

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Figure 2. Rate of antenatal corticosteroid use among infants born at 24-31⁶/₇ weeks of gestation^a in Florida^b - Hospital X, 2004-2013.



^aAs defined by The Joint Commission (TJC), the National Quality Forum (NQF), and the Vermont-Oxford Network (VON).

^bCompared to same-level hospitals with more than 25 births of infants within this age range.

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