

# Steroids During Late Preterm Labor? Better Later Than Never

Steroids—even when administered in the last leg of the late preterm period—reduce the likelihood of respiratory complications in newborns.

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## PRACTICE CHANGER

Use of steroids in women at risk for preterm delivery, even if they are 36 weeks, 6 days' pregnant, may reduce respiratory complications in newborns with minimal risk for neonatal or maternal complications.

## STRENGTH OF RECOMMENDATION

**A:** Based on a good-quality randomized controlled trial (RCT) and consistent with a meta-analysis.<sup>1</sup>

A 21-year-old G1P0 at 35 weeks, 2 days of gestation presents to labor and delivery reporting a “gush of clear fluid.” On exam, you confirm she has preterm rupture of membranes. She is contracting every three minutes and has a cervix dilated to 3 cm. Is there any neonatal benefit to using corticosteroids in this late preterm period?

Approximately 12% of all births in the United States are the result of preterm labor, and 8% take place in the late preterm period, defined as 34 to 36 weeks' gestation.<sup>2,3</sup> To reduce risk for neonatal death and respiratory complications, both the American College of Obstetricians and Gynecologists and the National Institutes of Health recommend a course of corticosteroids between 24 and 34 weeks' gestation for women at increased risk for preterm delivery.<sup>2,4</sup> Due to a lack of evidence from RCTs on the benefit of corticosteroids in late preterm labor, there are no recommendations to extend this period.<sup>5</sup> However, multiple studies have shown that babies born during the late preterm period have

more neonatal complications than term newborns.<sup>6-8</sup>

A retrospective chart review of more than 130,000 live births found that newborns who were delivered between 34 and 36 weeks had higher rates of respiratory distress than those delivered at 39 weeks (ventilator use dropped from 3.3% at 34 weeks to 0.3% at 39 weeks, and transient tachypnea decreased from 2.4% at 34 weeks to 0.4% at 39 weeks).<sup>6</sup> Another retrospective review of more than 230,000 newborns, 19,000 of whom were born in the late preterm period, revealed that more neonates born between 34 and 36 weeks' gestation had respiratory distress syndrome than neonates delivered at 39 weeks (10.5% at 34 weeks, 6% at 35 weeks, 2.8% at 36 weeks vs 0.3% at 39 weeks).<sup>8</sup>

## STUDY SUMMARY

### Late preterm newborns breathe better with antenatal betamethasone

This RCT examined the effectiveness of betamethasone in preventing neonatal respiratory complications for 2,831 women at high probability of preterm delivery between 34 weeks and 36 weeks, 6 days of gestation. “High probability of preterm delivery” was defined as preterm labor with intact membranes and at least 3 cm dilation or 75% cervical effacement; spontaneous rupture of membranes; or anticipated preterm delivery for any other indication either through induction or cesarean section between 24 hours and seven days after the planned randomization.

Patients were randomly assigned to receive two intramuscular injections (12 mg each) of either betamethasone or placebo,

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24 hours apart. The two doses were successfully given in 60% of the betamethasone group and 59% of the placebo group. In 95% of the cases in which the second dose was not given, it was because delivery occurred within 24 hours of the first dose.

The primary outcome was the need for respiratory support within 72 hours of birth, defined as one or more of the following: the use of continuous positive airway pressure (CPAP) or high-flow nasal cannula for at least two consecutive hours, supplemental oxygen for at least four continuous hours, extracorporeal membrane oxygenation (ECMO), or mechanical ventilation.

The median length of time from enrollment to delivery was 31 to 33 hours, and 31.4% underwent cesarean delivery. In the intention-to-treat analysis, the primary outcome was significantly lower in the betamethasone group than in the placebo group (11.6% vs 14.4%; relative risk [RR], 0.80; number needed to treat [NNT], 35). Secondary outcomes (severe complications, representing a composite of the use of CPAP or high-flow nasal cannula for at least 12 continuous hours, supplemental oxygen for at least 24 continuous hours, ECMO, mechanical ventilation, stillbirth, or neonatal death within 72 hours after delivery) were also lower in the betamethasone group (8.1% vs 12.1%; RR, 0.67; NNT, 25). The betamethasone group also had a lower risk for transient tachypnea of the newborn (6.7% vs 9.9%; RR, 0.68).

There were no significant differences in the occurrence of maternal chorioamnionitis or endometritis between the groups. Hypoglycemia in the newborn occurred more in the betamethasone group (24% vs 15%; RR, 1.6; number needed to harm [NNH], 11). The betamethasone group had two neonatal deaths: one from septic shock, and the other from a structural cardiac anomaly and arrhythmia.

### WHAT'S NEW

#### **Betamethasone effective even in the late, late preterm period**

This study demonstrated an improvement in neonatal respiratory outcomes when

betamethasone versus placebo was used in the late preterm period. The findings were similar to those from the Antenatal Steroids for Term Elective Cesarean Section Research Team.<sup>9</sup> Their trial showed a reduction in respiratory complications in term neonates delivered via elective cesarean section to mothers who received antenatal betamethasone (NNT, 37, to prevent admission to a special care nursery with respiratory distress). The findings were also consistent with those of a recent meta-analysis evaluating the occurrence of respiratory complications with the use of antenatal betamethasone in women expected to deliver in the late preterm period or with a planned cesarean delivery at  $\geq 37$  weeks' gestation.<sup>10</sup>

### CAVEATS

#### **Neonates may develop hypoglycemia**

The authors of the study reported an increased risk for hypoglycemia in the neonates receiving antenatal betamethasone. The long-term implications of this are unclear, however, given that there was a reduction in intermediate care nursery and neonatal ICU stays that were three days or longer in the betamethasone group. There was also no difference in hospital length of stay between the two groups. Additionally, it's unclear if there are any long-term neonatal complications of betamethasone use in the late preterm period.

### CHALLENGES TO IMPLEMENTATION

#### **Challenges are negligible**

There are minimal challenges to implementing this strategy, as betamethasone is routinely used for preterm labor and is readily available on labor and delivery units. **CR**

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