

## PUBLISHED ABSTRACT

# Effects of Antenatal Steroids in Late Preterm Infants

Olivia Janssen, Nathan Fox, Robert Green and Veniamin Ratner

Icahn School of Medicine at Mount Sinai, NY, US

Corresponding author: Olivia Janssen ([Olivia.janssen@mountsinai.org](mailto:Olivia.janssen@mountsinai.org))

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### Introduction

Antenatal-corticosteroid therapy for women at risk for preterm delivery (<34 weeks gestational age [GA]) significantly improves survival/respiratory outcomes. Initial recommendations for antenatal-steroid administration from the American College of Obstetricians and Gynecologists (ACOG) did not include late-preterm infants (34–36 weeks GA) due to lower mortality rates; however, research continues to show late-preterm infants have higher morbidities compared to term counterparts, including respiratory distress, hypoglycemia, hypothermia, hyperbilirubinemia, and feeding difficulties.

Gyamfi-Bannerman et-al. demonstrated antenatal-steroids decreased severe respiratory complications in late-preterm infants, but increased rates of hypoglycemia. Based on these findings, ACOG extended their recommendations for antenatal-steroids to include women at risk for late-preterm delivery in an attempt to improve respiratory outcomes in late-preterm infants. However, respiratory and glycemic effects of antenatal-steroids on this gestation are still not clear.

### Objective

To determine whether antenatal-steroids mitigate respiratory morbidities, but become a new risk factor for hypoglycemia in late-preterm neonates.

### Design/Methods

This single center study includes mother-baby dyads delivered at 34 0/7–36 6/7 weeks GA between 01/2016–12/2016. Respiratory effects of antenatal-steroids were assessed by diagnosis of respiratory distress in first 24 hours-of-life and total days of respiratory support in patients with respiratory distress. Glycemic effects were assessed by lowest serum glucose levels in first 24 hours-of-life. Effects on outcomes were evaluated using t-tests, chi-squares, and generalized-estimating-equations (GEE) to account for multiple gestations and adjust for confounding variables.

### Results

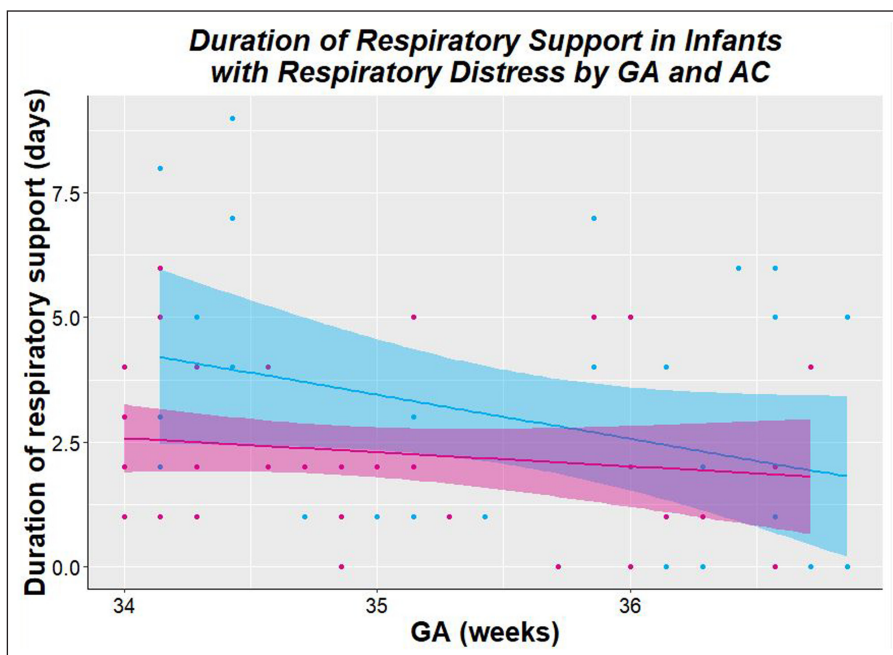
Study included 500-neonates and 426-mothers. 59.8% neonates (N = 299) were exposed to steroids. To account for potential confounders, maternal/neonatal risk factors ( $p < 0.10$ ) were included in the analysis (GA, preterm premature rupture-of-membranes, gestational diabetes, Apgars, birth-weight, large for gestation [LGA]).

Among the entire group, there were no differences in rate of respiratory distress, duration of respiratory support, or lowest glucose levels. Considering effects of GA on respiratory/glycemic outcomes, the cohort was divided into subsets based on GA for further analysis.

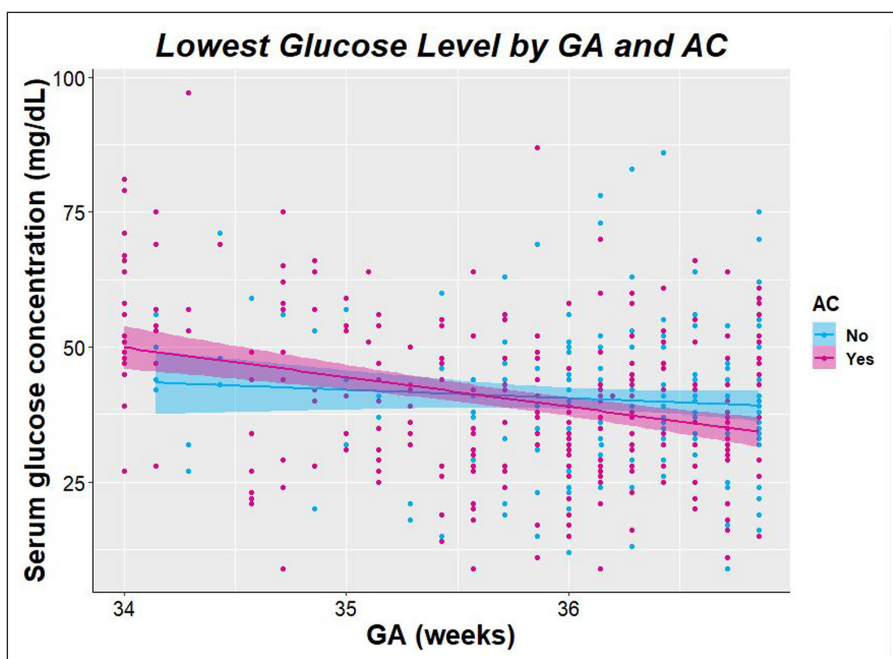
In the 34 week GA-group, antenatal-steroids did not affect rate of respiratory distress or lowest glucose levels, but significantly decreased the duration of respiratory support ( $2.7 \pm 0.5$  days steroid-group vs.  $4.7 \pm 0.8$  days non-steroid group,  $p = 0.03$ ). In the 35 week GA-group, steroids didn't affect rate of respiratory distress, duration of respiratory support, or lowest glucoses. In the 36 week GA-group, steroids didn't affect rate of respiratory distress or duration of respiratory support, but significantly decreased lowest glucose levels ( $35.2 \pm 2.4$  vs.  $38.6 \pm 1.9$  mg/dL,  $p = 0.04$ ). This effect was additive when combined with other risk factors (gestational diabetes, LGA).

### Conclusion

Antenatal-steroid exposure shortened duration of respiratory therapy only in infants born <35 weeks GA, and increased severity of hypoglycemia in infants born  $\geq 36$  weeks GA. (**Graphs 1 and 2**). Findings suggest current ACOG recommendations for late preterm antenatal-steroid administration may not be beneficial for infants born  $\geq 36$  weeks.



**Graph 1:** Duration of Respiratory Support in Infants with Respiratory Distress by Gestational Age and Antenatal Corticosteroids.



**Graph 2:** Lowest Glucose Level by Gestational Age and Antenatal Corticosteroids.

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