**CORTICOSTEROIDS**

**Corticosteroids: Late Preterm**

**SUMMARY: For patients with a singleton pregnancy, no prior exposure to antenatal corticosteroids, and no contraindications, a single course of corticosteroids is recommended between 34 0/7 - 34 6/7 weeks’ gestation when *imminent* *preterm* delivery is anticipated. A single course of corticosteroids should be considered in this same population between 35 0/7 - 36 5/7 weeks on a case-by-case basis depending on gestational age, likelihood of preterm birth, and anticipated mode of delivery.**

**History**: Infants born at 34 0/7 to 36 6/7 weeks’ gestation account for 70% of all preterm births. They are at greater risk for adverse respiratory outcomes than those born at 37 weeks of gestation or later. ALPS was a multicenter, randomized trial of women with a singleton pregnancy at 34 0/7 - 36 5/7 weeks’ gestation who were at high risk for delivery during the late preterm period (34 0/7 - 36 6/7 weeks). Betamethasone administration decreased the need for substantial respiratory support during the first 72 hours after birth.1 Betamethasone administration resulted in reduced rates of severe neonatal respiratory complications, transient tachypnea of the newborn, bronchopulmonary dysplasia, and reduced rates of surfactant use, resuscitation and prolonged stay in a special care nursery. There were no significant differences in the incidence of chorioamnionitis or neonatal sepsis. Neonatal hypoglycemia was more common in the betamethasone group than in the placebo group although no adverse events related to this were observed. Pre-specified subgroup analysis of the original ALPS trial showed NO significant improvement in respiratory outcomes after 36+0 weeks OR when vaginal delivery was attempted.2,3

Animal studies demonstrate neurodevelopmental effects at various stages of organ development. After publication of the ALPS data in 2016, there was widespread, rapid increase in late preterm steroid administration, leading to a greater number of individuals exposed in utero.4 A recent abstract showed no difference in neurodevelopmental outcomes for 949 children from the original ALPS cohort who completed a cognitive skills-based assessment.5 In contrast, a systematic review in 2022 suggested a higher risk of adverse neurocognitive and/or psychological outcome in children with late preterm steroid exposure and term birth.6

Providers should exercise more caution when administering late preterm steroids. Sometime between 34- 37-weeks’ gestation, respiratory benefits decrease as potential risks increase. More research is required to better elucidate the transition point.

**Eligible patients**: Pregnant persons at 34 0/7-36 5/7 weeks if the risk for late preterm delivery within the next 24 hours to 7 days appears substantial, regardless of membrane status. **Our recommended algorithm is summarized in the table below.**

|  |  |  |
| --- | --- | --- |
| **Gestational Age** | **Planned Vaginal Birth** | **Planned Cesarean Birth** |
| 34+0 to 34+6 | Administer | Administer |
| 35+0 to 35+6 | Discuss risks and benefits | Administer |
| 36+0 to 36+5 | Do not administer | Discuss risks and benefits |

**Technique**: Administer Betamethasone 12 mg IM q 24 hrs x 2 doses. This is considered one course of steroids.

**Contraindications**:

* Allergy to steroids.
* Prior course(s) of antenatal corticosteroids during the pregnancy.
* Chorioamnionitis.
* Multiple gestation.
* Pregestational diabetes.
* Delivery anticipated within 12 hours.
* Non-reassuring fetal status.
* Cervical dilation of 8 cm or more.
* Major non-lethal fetal congenital anomaly.
* Maternal candidate for stress dose corticosteroids because of chronic steroid therapy

**Special Considerations**:

* Tocolysis is not indicated and should not be used in patients presenting in the late preterm period even to afford time for corticosteroid administration.
* Indicated delivery should not be delayed to administer antenatal corticosteroids in this gestational age group.
* In women with preterm labor symptoms in the late preterm period, evidence of preterm labor was defined in ALPS as cervical dilatation of at least 3 cm or effacement of at least 75% in order to minimize overtreatment in women who would likely deliver at term.
* It may be reasonable to delay delivery to administer corticosteroids in patients with PROM who are not laboring or infected and in whom fetal status is reassuring when they present between 34 0/7 and 36 5/7 weeks.
* It may be reasonable to administer steroids when delivery is anticipated in < 12 hrs.

**References**:

1. Gyamfi-Bannerman et al for the NICHD MFMU Network, *Antenatal Betamethasone for Women at Risk for Late Preterm Delivery*, NEJM, 2016
2. Society for Maternal-Fetal Medicine Consult Series #58: Use of antenatal corticosteroids for individuals at risk for late preterm delivery. Reddy et al for the Society for Maternal-Fetal Medicine (SMFM); AJOG, Nov 2021
3. ACOG Practice Advisory: Antenatal Corticosteroid Administration in the Late Preterm Period, April 2016
4. SMFM Publications Committee. SMFM Statement: Implementation of the use of antenatal corticosteroids in the late preterm birth period in women at risk for preterm delivery. Am J Obstet Gynecol 2016
5. Gyamfi-Bannerman et al, C. ’Neurodevelopmental outcomes after late preterm antenatal corticosteroids: the ALPS Follow Up Study’. SMFM March 2023, Late-breaking abstract.
6. Ninan k, et al. Evaluation of Longer Term Outcomes Associated with Preterm Exposure to Antenatal Corticosteroids, A Systematic Review and Meta-Analysis. JAMA Pediatr. 2022;176(6).