

ANTENATAL STEROIDS FOR WOMEN AT RISK OF PRETERM DELIVERY

CHOICE OF AGENT:

Two regimens of antenatal glucocorticoid treatment have evolved and are effective for accelerating fetal lung maturity

1. Betamethasone (two doses of 12 mg given intramuscularly 24 hours apart) preferred agent if available.
2. Dexamethasone (four doses of 6 mg given intramuscularly 12 hours apart).

GESTATIONAL AGE AT ADMINISTRATION:

1. Administration of steroids for patients with threatened and imminent periviable birth **at less than 22^{0/7} weeks** is not recommended.
2. Administration of steroids for patients with threatened and imminent periviable birth **between 22^{0/7} and 23^{6/7} weeks** can be considered after counseling by both MFM and NICU based on existing evidence.¹⁻⁴
3. All fetuses **between 24^{0/7} and 33^{6/7} weeks** of gestation at risk of preterm delivery should be considered candidates for antenatal treatment with corticosteroids regardless of membrane status (intact or ruptured).
4. In women with a singleton pregnancy **between 34^{0/7} and 36^{6/7} weeks** who are at high risk for preterm birth within next 7 days (and before 37^{0/7} weeks of gestation), we recommend treatment with a course of betamethasone (without tocolysis) provided they meet eligibility criteria.
 - a. Inclusion criteria:
 - i. Singleton pregnancy
 - ii. Gestational age at presentation between 34^{0/7} and 36^{6/7} weeks
 - iii. High probability of delivery (any one of the following):
 1. Preterm labor with intact membranes and at least 3cm dilation or 75% effacement
 2. Delivery expected by induction of labor or cesarean section in no less than 24 hours and no more than 7 days, as deemed necessary by the provider.
 - b. Exclusion criteria:
 - i. Any prior antenatal steroids during the pregnancy
 - ii. Preterm rupture of membranes \geq 34^{0/7} weeks
 - iii. Candidate for stress dose steroids
 - iv. Caution with multiple gestation (twins, etc.)
 - v. Fetal demise
 - vi. Caution with known major fetal anomaly or multiple minor fetal anomalies
 - vii. Maternal contraindication to betamethasone
 - viii. Pregestational and gestational diabetes
 - ix. Expected to deliver in less than 24hrs
 - x. Cervical dilation of 8cm or more
 - xi. Chorioamnionitis
 - xii. Nonreassuring fetal status
 - xiii. Lack of gestational-dating on ultrasound before 32 weeks for a women with known LMP or before 24 weeks of gestation for those with unknown LMP

RESCUE THERAPY:

1. If delivery does not occur within 7 days from the first course of steroids, patient is less than 34^{0/7} weeks, and delivery is imminent then a single course of rescue steroids is indicated.
2. Rescue therapy consists of a single repeat course of betamethasone (2 doses of 12 mg IM given 24 hours apart - preferred agent) or dexamethasone (4 doses of 6 mg IM given 12 hours apart).
3. We continue to support the conclusions of the 2000 NIH consensus conference that weekly courses of antenatal glucocorticoids should not be used outside of randomized controlled trials
4. If the initial complete course was dexamethasone and rescue therapy is indicated, the preferred agent will be betamethasone (if available).

ADDITIONAL NOTES:

1. The decision to use antenatal corticosteroids should not be altered by fetal race or gender or by the availability of surfactant replacement therapy.
2. Optimal benefit begins 24 hours after initiation of steroid therapy and lasts seven days.
3. In complicated pregnancies where delivery prior to 34^{0/7} weeks of gestation is likely, antenatal corticosteroid use is recommended unless there is evidence that corticosteroids will have an adverse effect on the mother or delivery is imminent.

FHR CHANGES AFTER THERAPY:

1. Transient fetal heart rate (FHR) and behavioral changes that typically return to baseline by four to seven days after treatment.
2. The most consistent FHR finding is a decrease in variability on days 2 and 3.
3. Fetal breathing and body movements are also commonly reduced, which may result in a lower biophysical profile (BPP) score or nonreactive nonstress test (NR-NST).
4. Maternal perception of fetal movement is not affected.
5. Given these observations, the possibility of transient fetal changes associated with antenatal steroids should be considered within the total clinical picture when assessing a fetus for possible delivery because of a nonreassuring fetal evaluation (NR-NST or low BPP score) within a few days of glucocorticoid administration.

References:

1. Periviable birth. Obstetric Care Consensus No. 6. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2017;130:e187–99.
2. Ehret DEY, Edwards EM, Greenberg LT, Bernstein IM, Buzas JS, Soll RF, Horbar JD. Association of Antenatal Steroid Exposure with Survival Among Infants Receiving Postnatal Life Support at 22 to 25 Weeks' Gestation. *JAMA Netw Open*. 2018;1(6): e183235. doi:10.1001/jamanetworkopen.2018.3235
3. Mori R, Kusuda S, Fujimura M, Neonatal Research Network Japan. Antenatal corticosteroids promote survival of extremely preterm infants born at 22 to 23 weeks of gestation. *J Pediatr* 2011; 159: 110-114
4. Carlo WA, McDonald SA, Fanaroff AA, Vohr BR, Stoll BJ, Ehrenkranz RA, et al. Association of antenatal corticosteroids with mortality and neurodevelopmental outcomes among infants born at 22 to 25 weeks' gestation. Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. *JAMA* 2011;306:2348–58