SCHOOL OF MEDICINE
DEPARTMENT OF OBSTETRICS & GYNECOLOGY

STANDARD OPERATING PROCEDURE- GUIDELINE

ANTENATAL CORTICOSTEROID THERAPY FOR FETAL MATURATION

SCOPE/APPLICABILITY:

This policy is relevant to all women who are at risk for preterm delivery between 24 and 33 6/7 weeks gestation. It also addresses management of fetuses in the periviable period, multiple gestations, PPROM and late preterm birth.

PURPOSE:

Corticosteroid administration before anticipated preterm birth is one of the most important antenatal therapies available to improve newborn outcomes.
The administration of antenatal corticosteroids to the woman whom is at risk of imminent preterm birth is strongly associated with decreased neonatal morbidity and mortality.
Neonates whose mothers received antenatal corticosteroids have significantly lower severity and frequency of respiratory distress syndrome, intracranial hemorrhage, and necrotizing enterocolitis than those neonates whose mothers who had not been treated.

DEFINITIONS:

Preterm birth: occurs between 24 0/7 weeks and 36 6/7 weeks gestation. Corticosteroid administration recommended between 24 0/7 and 33 6/7 weeks gestation for women at risk for preterm delivery.

Periviability: 23 0/7 – 25 6/7 weeks gestation. Corticosteroid use may be considered starting at 23 0/7 weeks gestation in women at risk for preterm delivery.

Late preterm birth: occurs between 34 0/7 weeks and 36 6/7 weeks gestation. Corticosteroids "can be beneficial". Groups not part of study include: multiple gestations, women with pregestational diabetes, women who had previously received a dose of corticosteroids, and women who gave birth by cesarean section at term.

PROCEDURE:

Treatment consists of two 12-mg doses of betamethasone given intramuscularly 24 hours apart
OR
Four 6-mg doses of dexamethasone administered intramuscularly every 12 hours.

Treatment:

A single course of steroids is recommended for pregnant women who are at risk of preterm delivery within seven days between gestational ages 24 0/7 weeks and 33 6/7 weeks and may be considered starting at 23 0/7 weeks.

Betamethasone and dexamethasone are the most widely studied corticosteroids and are the preferred medications for antenatal treatment to accelerate fetal organ maturation. Both cross the

placenta, have nearly identical biologic activity, lack mineralocorticoid activity, and have weak immunosuppressive activity.

Betamethasone is given in two 12 mg IM doses 24 hours apart.
Dexamethasone regimen is four doses of 6 mg IM administered every 12 hours

The first dose should be given even if the ability to give the second dose is unlikely due to imminent delivery, since treatment with corticosteroids for less than 24 hours is still associated with a significant decrease in neonatal morbidity and mortality. No additional benefit has been demonstrated when corticosteroids are given at shorter intervals (sometimes called accelerated dosing), even when delivery appears imminent. The benefit of corticosteroid administration is greatest at 2-7 days after the initial dose.

Periviability

Data from the NICHD revealed a reduction in death and neurodevelopmental impairment at 18-22 months for infants who had been exposed to antenatal corticosteroids and born at 23 0/7 weeks through 25 6/7 weeks. Incidence of death, intraventricular hemorrhage, periventricular leukomalacia, and necrotizing enterocolitis were also decreased in infants born between 23 0/7 weeks and 25 6/7 weeks gestation in the treated group. At 22 0/7 weeks through 22 6/7 weeks of gestation, no significant difference in outcomes was noted.

A single course of corticosteroids may be considered for pregnant women starting at 23 0/7 weeks who are at risk for a preterm delivery within seven days. This plan is linked to a plan for neonatal resuscitation which should be discussed with the family.

PPROM

Current data suggest that antenatal steroids are NOT associated with increased risk of maternal or neonatal infection regardless of gestational age.

A single course of corticosteroids is recommended for pregnant women with ruptured membranes between 24 0/7 weeks and 33 6/7 weeks gestation. It may be considered at 23 0/7 weeks. Whether to administer a repeat or rescue course of corticosteroids with PPROM is controversial, and there is insufficient evidence to make a recommendation.

Multiple Gestations

A Cochrane review concluded that further research was required to demonstrate an improvement in neonatal outcomes for multifetal gestations in mothers treated with corticosteroids in antepartum period.

One study demonstrated that administration of a complete course of corticosteroids 1-7 days before birth in twin gestations is associated with a clinically significant decrease in neonatal mortality, short term respiratory morbidity, and severe neurologic injury that is similar in magnitude to that observed among singletons.

One course of corticosteroids is recommended for all patients between 24 0/7 and 33 6/7 weeks gestation irrespective of fetal number. Treatment may be considered at 23 0/7 weeks regardless of fetal number.

Late Preterm Birth

A single course (2 doses 24 hours apart) of betamethasone IS RECOMMENDED for pregnant women at high risk of late preterm birth within 7 days, between 34 0/7 weeks and 36 6/7 weeks of gestation who have not received a prior course of antenatal corticosteroids.

It is NOT indicated in women diagnosed with chorioamnionitis.

Tocolysis should NOT be used in an attempt to delay delivery in order to complete a course of steroids.

An indicated late preterm delivery (such as preeclampsia with severe features) should NOT be delayed for corticosteroid administration.

Groups not studied by the Antenatal Late Preterm Steroids trial include: women with multiple gestations, pregestational diabetes, women who gave birth by cesarean at term, and those who had a previous course of corticosteroids.

The MFMU study showed that the administration of betamethasone led to a significant decrease in the need for respiratory support, with an even larger decrease in severe respiratory complications. There were also significant decreases in the rates of transient tachypnea of the newborn, bronchopulmonary dysplasia, the need for post-natal surfactant, and RDS. Exposed infants were less likely to need postnatal resuscitation.

Hypoglycemia was more common in infants exposed to betamethasone, (24% vs, 24.9%), with no reported adverse events or prolongation of length of stay. The American academy of Pediatrics recommends the monitoring of neonatal blood sugars for late preterm infants because late preterm birth is a known risk factor for hypoglycemia.

Single Rescue Course:

A single repeat course of antenatal corticosteroids SHOULD BE CONSIDERED in women who are less than 34 0/7 weeks of gestation who are at risk of delivery within 7 days and whose prior course of antenatal steroids was administered more than 14 days previously. Rescue course corticosteroids could be provided as early as 7 days from the prior dose if indicated by the clinical scenario.

Administration of a rescue course of corticosteroids in cases of PPROM is controversial with insufficient evidence to make a recommendation for or against.

LONG TERM OUTCOMES:

The concern that corticosteroids may have the potential to adversely affect neurodevelopmental outcomes is largely based on animal data and from studies of multiple course steroids. The MFMU study of repeat course corticosteroids suggests that four or more courses may be associated with the development of cerebral palsy. Numerous studies have shown no evidence of long term harm and improved survival and neurodevelopmental outcomes. Cognitive functioning as measured by the Weschler scales, working memory and attention, and other neurocognitive assessments were not different between exposure groups.

REFERENCES:

ACOG COMMITTEE OPINION # 713 (August 2017 – reaffirmed 2018)

APPROVALS:

SOP Owner:	Jacquelyn Blackstone, DO	Date: 6/28/20
Chair Approval:		Date:6/29/2020
Effective Date:	June 28, 2020	