Background information

In 1972 a study demonstrated that a single course of antenatal corticosteroids treatment may enhance fetal maturation before preterm birth and decrease the rate of respiratory distress syndrome, intraventricular haemorrhage and neonatal death.\(^1\)\(^-\)\(^3\) This treatment results in less neonatal mortality, fewer common neurological and abdominal complications such as cerebroventricular haemorrhage and necrotising enterocolitis. There does not appear to be any negative effects from the corticosteroid for the mother, and long-term outcomes on both the baby and the mother are good.\(^3\)

The use of antenatal steroid are most effective in reducing the incidence of respiratory distress syndrome in pregnancies that deliver 24 hours after and up to 7 days after administration of the second dose of antenatal corticosteroids.\(^3\),\(^4\)

A randomised trial done in 2005 found that if antenatal corticosteroids were administered prior to a planned elective caesarean section (ELUSCS) between 37-39 weeks the incidence of respiratory distress can be reduced by more than 50%.\(^5\)

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) suggest this should be considered by practitioners.\(^6\)

Randomised long-term evidence of safety would be required before support would be given to courses beyond the first two doses. Repeated dose(s) of corticosteroid reduces neonatal respiratory distress syndrome (RSD). However, at birth infants exposed to repeated corticosteroids showed a reduction in some measures of growth, although by the time of discharge and later follow-up in childhood no differences were seen in weight, head circumference and height. There is still insufficient evidence regarding longer-term benefits of multiple courses of antenatal corticosteroids.\(^3\),\(^4\),\(^7\) Animal studies have shown neurological developmental deficits in newborns following multiple courses of antenatal steroids compared to a single dose.\(^8\)

A single “rescue” course of antenatal corticosteroids administered prior to 33 weeks gestation improves neonatal outcomes and has not been shown to increase any short term risks.\(^9\) Recent research also shows that administration to women at risk of late preterm birth (34-36 weeks) reduces neonatal respiratory complications.\(^10\)
When administering antenatal corticosteroid practitioners should be aware of the short term effect on the fetus including a reduction in fetal heart rate variability, and also fetal body movements and breathing activity may be reduced for 2-3 days.  

**Dosage and administration of a course of antenatal corticosteroids**

Administer one dose of Betamethasone (Celestone Chronodose) 11.4mg by intramuscular injection and repeat this dose 24 hours later.

**Note:**
- 1 dose = 11.4 mg intramuscular injection i.e. 2 ampoules of Betamethasone (Celestone Chronodose)
- 1 course = a total of 2 doses which are given 24 hours apart.

**Key points**

1. Administration of a single course of antenatal corticosteroid therapy should be offered to all women between 23 to 36+6 weeks gestation at risk of preterm delivery.

2. **Note:** This guideline does not apply to **women with pre-existing diabetes** (Type 1 and Type 2 Diabetes) who are at risk of a late preterm birth (34 – 36+6). There is poor or no evidence of any benefit in this subgroup and significant risks to the mother, fetus and the newborn.

   **In women with Gestational Diabetes and at risk of late preterm birth (34 - 36+6)** the decision to administer corticosteroids should be made at a senior level and with careful considerations of the risks and benefits. The evidence of benefit of antenatal corticosteroid in this subgroup comes from a small number of cases and is not very strong. There are strict dietary restrictions and careful regular monitoring of blood sugar protocols to be followed if the decision is made to proceed with the administration.

3. Unless birth is imminent, even if one dose is anticipated, a course of antenatal corticosteroids should be commenced for all women at risk of pre-term birth.  

4. If there are no contra-indications for tocolysis it should be considered to allow time for a completed course of antenatal corticosteroid therapy for gestations under 34 weeks only. The extension of steroid use to 36+6 weeks does not mean that KEMH recommends tocolytic therapy past 34 weeks.

5. Women with preterm rupture of membranes should be offered a course of corticosteroid therapy provided there are no clinical signs of infection. 

6. Antenatal corticosteroid therapy is contraindicated in a woman with a systemic infection including tuberculosis. Caution is required if chorioamnionitis is
suspected. Consultation with the team Consultant should occur in this circumstance.

7. Inform the Obstetric Medicine Consultant on call or Registrar when antenatal corticosteroids are administered to a woman with diabetes of any type. This ensures close supervision of diabetes control, allows adjustment of hypoglycaemic medication and avoids complications that may occur due to the possibility of severe transient hyperglycaemia following corticosteroid administration.11

8. Women with a multiple pregnancy should be offered a course of antenatal steroids if they are at risk of giving preterm birth within 7 days. Currently there is inconclusive evidence about the dosage and benefits of antenatal corticosteroid administration in multiple pregnancies.13

9. Multiple doses of antenatal corticosteroids have been shown to reduce the incidence of neonatal RDS, and evidence does not show any harm in early childhood14. However, long-term risk and benefits for the woman or infant is unknown so is currently not recommended at KEMH.

10. The administration of antenatal corticosteroids to reduce the risk of RDS if a planned elective caesarean section (ELUSCS) is arranged between 37-39 week gestation, is debated. The team Consultant should be involved in the decision.

References


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4. Medication Safety

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