Plain language summary

Antenatal corticosteroids to reduce neonatal morbidity and mortality

Who is this summary for?

This summary is for women who are pregnant and who have been advised by their doctor to have a course of corticosteroid injections because they may give birth early. This may include women who have already given birth early, their support partners, or their family.

What is this summary about?

The National Women and Infants Health Programme have developed a number of clinical guidelines. One of these guidelines is a National Guideline for the use of corticosteroids in pregnancy, given to the pregnant woman to reduce the risks of complications for premature babies (born before 37 weeks). This plain language summary will describe the key points and important take home messages from the Guideline.

What is preterm or premature birth and how does it affect a baby?

Preterm or premature birth, is a birth that occurs before 37 weeks of pregnancy. Preterm birth can be associated with complications for babies, including for their digestive system (or gut), central nervous system (brain), and respiratory system (lungs). This happens because a baby's organs are not fully developed, both in how they are formed and how they work, until late in the pregnancy. Preterm birth is a leading cause of early childhood illness and death around the world.

Respiratory Distress Syndrome (RDS) is a leading cause of illness in a premature baby, affecting up to 50% of babies born before 28 weeks and up to 33% in those born before 32 weeks.

During pregnancy, certain natural chemicals called glucocorticoids, help babies' lung functions and development while they are in the womb. This allows the lungs to strengthen and make it easier for babies' to breathe once they are born.

What are corticosteroids?

Corticosteroids are a type of medication that may be offered to pregnant women to help prevent complications if there is a chance that they may have their baby early.

Corticosteroids are prescribed by the woman's healthcare team and are given in hospital. Corticosteroids are given by an injection into the muscle, usually in the thigh or upper arm. A single course of corticosteroids usually consists of two injections given over a 24 hour period. Corticosteroids administered in this situation are referred to as antenatal corticosteroids.

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Two researchers, Liggins and Howie, first identified the association between corticosteroids and lung development in 1969, when a medication called dexamethasone was administered to pregnant sheep. The first large study to look at the effects of corticosteroids in women prior to premature birth was carried out in the early 1970's. This study reported a reduction in RDS and death in premature babies. Since then, several studies have confirmed these original findings, that giving corticosteroids in pregnancy is beneficial to lung development in the unborn baby.

The choice of corticosteroid drug, dosing and timing still varies internationally between healthcare systems and remains a subject of much debate in the literature and in guidelines.

Why are corticosteroids important?

Premature babies may have an increased risk of health problems, which tend to be more serious the earlier they are born.

Corticosteroids have been used for many years in women who are thought to have a high chance of having their baby early. Corticosteroids will help improve babies' lung development. A single course of corticosteroids has been shown to reduce risks of several serious complications in babies that are born early including:

- Mortality
- Problems with breathing (RDS)
- Bleeding into the brain (IVH)
- Developmental delay

Who should be given corticosteroids in pregnancy?

Corticosteroids are recommended as a single course to pregnant women at risk of delivery between 24 weeks and 34 weeks plus 6 days of pregnancy.

This includes:

- If they are in active or suspected premature labour
- If waters have broken early (even if there are no contractions)
- If it may benefit the unborn baby to be delivered early e.g. if the baby is not growing well
- If it may benefit the woman to deliver their baby early e.g. if she is seriously unwell, is experiencing heavy bleeding or has been diagnosed with severe pre-eclampsia (high blood pressure) in pregnancy.

When are corticosteroids not necessary?

It is not necessary to receive corticosteroids if birth is not expected to be born within the next 7 days. A course of antenatal corticosteroids is not routinely recommended after 35 weeks of pregnancy.

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Are there any reasons that corticosteroids should be avoided?

Corticosteroids should not be given to women with a known allergy to any part of the corticosteroid injection.

If a woman has an active infection (bacterial, viral or fungal), a careful decision must be made by the healthcare team whether to proceed with corticosteroids. This should be done on an individual basis.

Corticosteroids are not recommended for women who have an infection surrounding their placenta called chorioamnionitis and who are likely to give birth preterm.

What steroid should be given?

The most widely studied antenatal corticosteroids are betamethasone and dexamethasone, and both have similar structures and activity. All current international guidelines and best practice statements include both agents in their recommendations, with no good evidence on which corticosteroid is more effective.

International guidelines are in agreement that a corticosteroid course consists of a total dose of 24 mg, of either dexamethasone or betamethasone, given in divided doses, either 12 or 24 hours apart.

While the optimal drug, dose, regimen and timing of antenatal corticosteroids continues to be investigated internationally, a course consisting of dexamethasone phosphate 24 mg administered intramuscularly in two doses of 12 mg, 24 hours apart, is recommended in this guideline for women for whom antenatal corticosteroids are considered clinically appropriate.

An alternative course is betamethasone phosphate 24 mg given in two divided doses of 12 mg, 24 hours apart.

When is the best time for corticosteroids to be given?

Corticosteroids are of most benefit if the last dose is given between 24 hours and 1 week before birth. There may still be some benefit even if the baby is born within 24 hours of the first dose.

What are the potential side effects of corticosteroids for mother and baby?

Some commonly reported side-effects after corticosteroids include:

- Pain at the site of injection
- Flushing of face and chest
- Glucose appearing in urine for 1-2 days
- Difficulty sleeping at night for 1-2 days
- Some reduction in baby's movements for around 24 hours

A course of corticosteroids given between 23 and 35 weeks of pregnancy is likely to be safe and beneficial for babies born prematurely. No long-term harm has been shown although no large studies have taken place.

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Some babies are at risk of;

- A slightly lower birth weight than average
- Low blood sugar levels after birth that need extra monitoring and management

Can corticosteroids be offered to women where premature delivery is likely between 23 weeks to 25 weeks of pregnancy?

Corticosteroids should be offered to women where premature delivery is likely in the next 7 days from 23 weeks of pregnancy. This should be done on an individual basis and in conjunction with the healthcare team, pregnant woman and their support partner/family. This can still happen even if it is anticipated that the full course of corticosteroids may not be completed prior to delivery.

In certain circumstances, the healthcare team may offer corticosteroids from 22 weeks plus five days of pregnancy.

Can corticosteroids be given at 35 weeks to 36 weeks plus six days of pregnancy?

A course of corticosteroids is not routinely recommended at this stage of pregnancy.

While there is evidence of benefit at this gestation, there is also some evidence of potential harm, with a lack of large, high quality studies examining long-term neurodevelopmental outcomes in babies. Neurodevelopmental Impairment (NDI) is wide ranging but can include problems with learning, speech development and motor development including the risk of cerebral palsy.

Infants at high risk of pre-term birth at this late pre-term gestation need to be considered separately given:

- Corticosteroids reduce the risk of what is typically a short-term and self-limiting complication
- The fetal brain is at a crucial and vulnerable point of development between 34 to 36 weeks gestation.

This is why routine use of antenatal corticosteroids is not recommended for most babies after 35 weeks.

Can corticosteroids be given before planned caesarean section at term (37 weeks to 39 weeks plus 6 days gestation)?

Infants born by caesarean section at term are at a greater risk of breathing problems, compared to infants born via vaginal birth, including the risk of respiratory distress syndrome and transient tachypnoea of the newborn, a condition characterised by slow clearing of lung fluid.

Administration of corticosteroids after 37 weeks gestation should not be considered given the overall mild and transient risk of respiratory illness, the lack of evidence of benefit and the emerging evidence of potential harm from some studies.

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Should corticosteroids be offered if there is a multiple pregnancy (i.e. twin, triplet pregnancy)?

A course of antenatal corticosteroids should be given, where preterm birth is anticipated in a multiple pregnancy between 23 weeks and 34 weeks plus six days of pregnancy. This is in line with the recommendation for singleton pregnancy.

The majority of evidence for corticosteroids in pregnancy is based on women who have singleton births, but the information available for multiple pregnancies is positive and from the data available, the benefits appear to be similar. This is why the same recommendations are made, and this should be explained to pregnant women for whom a course of antenatal corticosteroids is recommended.

If a pregnant woman has diabetes mellitus or gestational diabetes, should they be offered corticosteroids?

Women with pre-existing diabetes and diabetes that develops in pregnancy (gestational diabetes) should be offered corticosteroids within the same timeframe in pregnancy offered to women without diabetes.

If a woman has been diagnosed with gestational diabetes or has a pre-pregnancy diagnosis of diabetes, it is important to note that corticosteroids may affect her blood sugar control. Women with gestational diabetes or pre-existing diabetes, will have their blood sugar levels closely monitored by the healthcare team while receiving a course of corticosteroids. If a woman is taking insulin, they may require a higher or additional dose following a steroid injection.

Should corticosteroids be offered if there has been a premature rupture of membranes (i.e. waters have broken early)?

Women presenting with premature rupture of membranes between 23+0 and 34+6 weeks gestation should be offered antenatal corticosteroids along with preventative antibiotics.

Can more than one course of corticosteroids be given in pregnancy?

If delivery has not occurred within 7 to 14 days after receiving a single course of steroids, one repeat dose may be considered by the healthcare team, if baby is still expected to be born prematurely. The team will assess the potential benefits and risks of another dose based on the individual situation.

Women should be counselled that there may be a potential risk of lower birth weight, length or head circumference with repeated courses of corticosteroids.

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For further information visit:

RCOG: corticosteroids-in-pregnancy-patient-information-leaflet.pdf
https://www.rcog.org.uk/media/ixbnd3t4/corticosteroids-in-pregnancy-large-print-patient-information-leaflet.pdf

NICE guideline on Preterm labour and birth: Overview | Preterm labour and birth | Guidance | NICE
https://www.nice.org.uk/guidance/ng25

Irish Neonatal Health Alliance https://www.inha.ie/

Bliss: For babies born premature or sick https://www.bliss.org.uk/

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