Antenatal Corticosteroid Therapy for Fetal Maturation

This statement was prepared by the National Institute of Health Consensus Conference on the "Effects of Corticosteroids for Fetal Maturation as Perinatal Outcome". It is reproduced with permission from the National Institute of Health with a Canadian introduction and conclusion. This statement has been approved by the Maternal Fetal Medicine and Clinical Practice Obstetrics committees of the SOGC and the final draft approved by SOGC Council in March 1995.

Over the past 25 years, a steady reduction in perinatal mortality has occurred, primarily due to technologic advances in the care of the very low birth weight infants. However, there has been minimal reduction in the rates of delivery of infants of low birth weight in Canada. Low birth weight and prematurity are widely considered to be the most important risk factors for infant mortality and childhood disability of perinatal origin. It is estimated that low birth weight accounts for 75 percent of the early neonatal mortality. Each year in Canada, approximately 5.5 percent of infants are born weighing less than 2,500 grams. It is estimated that in 1991, there were 22,316 low birth weight infants. This compares with Finland’s rate of 3.9 percent in 1977, Sweden’s was 4.2 in 1988, and the percentage for France was 5.25 in 1982. Apart from the significant mortality and, more importantly, for the humanitarian and economic aspect, it must be recognized that this long-term morbidity is potentially avoidable. The cost to Canada is estimated conservatively as $11 million per day for this cohort of infants. In addition, there are 2,800 infants born each year of very low birth weight. It costs $168 million per year to care for these very low birth weight babies.

Recently, it has been estimated that only a small number of women who may be candidates for antenatal corticosteroid therapy actually receive it. At this time, data has been accumulated that document the benefit of corticosteroid therapy for reducing the frequency of not only Respiratory Distress Syndrome (RDS) but also Intraventricular Haemorrhage (IVH) and neonatal mortality.

With regard to the type of steroids, both dexamethasone and betamethasone appear to be beneficial. These agents are virtually identical in structure and biological activity, have long half-lives (up to 72 hours), and cross the placenta in biologically active forms. Moreover, they have little or no mineralocorticoid activity.
With regard to safety, there is no convincing scientific evidence that antenatal corticosteroid therapy increases the risk of either neonatal infection or adrenal suppression. Follow-up studies of children up to 12 years of age indicate that there is no apparent risk of adverse neurodevelopmental outcomes associated with antenatal corticosteroid administration. The maternal risk of infection when corticosteroids are given to women with preterm Premature Rupture of the Membranes (PROM) is less well established but seems to be small.

In March 1994, the National Institute of Child Health and Human Development and the Office of Medical Applications Research of the National Institute of Health in the USA convened a consensus conference sponsored by the National Heart, Lung and Blood Institute and the National Institute of Nursing on the effects of corticosteroids for fetal maturation. Their analysis of data concluded that antenatal corticosteroids clearly decrease the incidence of RDS in infants born at 29 to 34 weeks of gestation. Although antenatal corticosteroids do not clearly decrease the incidence of RDS in infants born at 24 to 28 weeks of gestation, they reduce its severity. More importantly, antenatal corticosteroids clearly reduce mortality and the incidence of IVH in infants born at 24 to 28 weeks of gestation.

The SOGC joins other international organizations including ACOG in approving the NIH recommendations that follow:

The benefits of antenatal administration of corticosteroids to fetuses at risk of preterm delivery vastly outweigh the potential risks. These benefits include not only a reduction in the risk of RDS but also a substantial reduction in mortality and IVH.

All women between 24 and 34 weeks of pregnancy at risk for preterm delivery are candidates for antenatal corticosteroid therapy.

Fetal race, gender, and availability of surfactant therapy should not influence the decision to use antenatal corticosteroid therapy.

Women eligible for therapy with tocolytic agents should also be eligible for treatment with antenatal corticosteroids.

Treatment should consist of either two doses of 12 mgs of betamethasone, intramuscularly, given 24 hours apart, or four doses of six mgs of dexamethasone, intramuscularly, given 12 hours apart. Optimal benefits begin 24 hours after initiation of therapy and last seven days.
Because treatment for less than 24 hours is still associated with significant reductions in neonatal mortality, antenatal corticosteroids should be given unless immediate delivery is anticipated. At this time, sufficient evidence is lacking to make recommendations about the efficacy or risk of repeat treatments with steroids if the delivery has not occurred seven days after the initial treatment.

Antenatal corticosteroid use is recommended in women with preterm PROM at less than 30 to 32 weeks of gestation in the absence of clinical chorioamnionitis because of the high risk of IVH at these early gestational ages (see Conclusions).

In women with complicated pregnancies for whom delivery prior to 34 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.

**CONCLUSIONS**

The SOGC Committees on Maternal Fetal Medicine, Clinical Practice • Obstetrics, and the SOGC Council agree with the conclusions of the NIH Consensus Conference. The NIH Consensus Panel also identified several areas in which research is still needed. These include the appropriateness of repeat doses and the short and long-term benefits and risks of repeat administration of antenatal corticosteroids seven days after the initial course.

**REFERENCES**


12. ACOG Committee Opinion, Committee on Obstetric Practice, Number 147 - December 1994

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