ADMINISTRATION OF ANTENATAL CORTICOSTEROIDS

A Key Intervention to Reduce Mortality and Morbidity Associated with Prematurity

The Causes and Results of Preterm Birth

Babies born before 37 weeks gestation are considered preterm babies. Preterm birth (PTB) is now the number one cause of *child* mortality causing nearly one million deaths per year.[1] Of babies born preterm, survivors may experience lifelong health challenges such as impaired brain development, impaired learning ability and compromised physical health.[2]

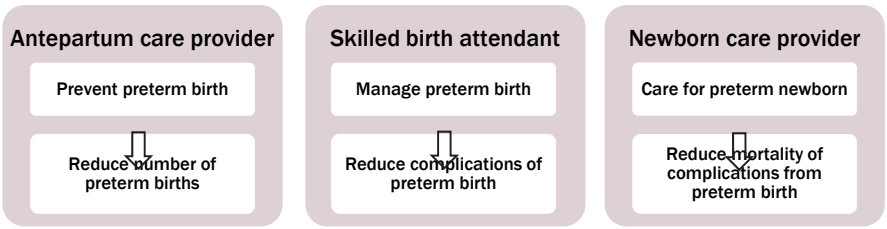
Much global attention is now directed at combating prematurity following the publication of *Born Too Soon*, a 2012 report detailing the first-ever comprehensive global statistics on prematurity. Preterm births are a complex global problem requiring investment in prevention, management and treatment from all sectors of society.

Why is prematurity important?

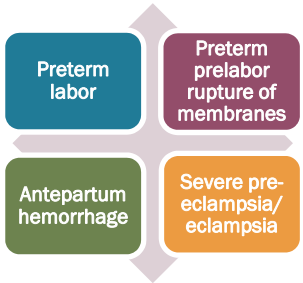
- Prematurity is on the rise globally and is now the number 1 cause of child mortality
- MDG 4 of reducing child mortality by 2015 can only be achieved by addressing prematurity
- Nearly 1 million deaths are due to preterm complications, 75% of which are preventable

While some preterm births happen without a clear reason, there are ***four main conditions*** that are known to lead to preterm birth: preterm labor, preterm prelabor rupture of membranes, antepartum hemorrhage and severe pre-eclampsia/eclampsia.

Multidisciplinary collaborative perinatal approach to reduce impact of PTB



Four conditions that can lead to preterm birth



Although babies are born preterm in every country, there are gross inequalities in their survival rates between high-income and low-income countries because of limited access to appropriate care in low-income countries. A common complication of prematurity is respiratory distress syndrome (RDS), wherein the baby has difficulty breathing because the lungs are underdeveloped. Use of antenatal corticosteroids (ACS) reduces the severity and mortality of RDS and has thus been identified as an important, high-impact intervention.[2] Dexamethasone (the most commonly used ACS) was added in 2013 to the World Health Organization's 18th List of Essential Medicines for the indication of promotion of fetal lung maturity, and is one of 13 priority medications identified by the United Nations Commission on Life Saving Commodities for Women and Children.[3,4,5]

What Are Antenatal Corticosteroids and Who Should Get Them?

Antenatal corticosteroids, principally dexamethasone, are medications given to mothers with a risk of imminent preterm birth to help accelerate fetal maturation, especially lung development, prior to birth. Babies with more mature lungs at birth are less likely to suffer from RDS, and thus, more likely to survive. ACS have been used safely in many countries since 1972 to increase the survival of preterm babies. Recent multi-country research in low and middle income countries has provided additional information regarding parameters for safe use of dexamethasone. This research showed the importance of making an accurate diagnosis of the conditions leading to preterm birth, as well as accurate estimation of gestational age (GA) to avoid problems associated with overtreatment[6]. Women with one of the four conditions leading to preterm birth, who are between 24 and 34 weeks gestation and are being cared for in a facility with services for the preterm newborn should be given ACS. Women at risk of PTB who are not in facilities who can care for preterm infants should be transferred to higher level care facilities.

How Effective Are ACS?

A Cochrane review of more than 20 studies conducted in hospitals in high and middle income countries found that ACS reduced neonatal mortality by 31%. There was no evidence of benefit at gestational ages >34 weeks.[7] Of these trials, four were in middle income countries (Brazil, Jordan, Tunisia and South Africa) which showed a higher effect on reducing neonatal deaths. However, a recent large study in 6 low and middle income countries

suggested that liberal use of ACS outside of high level health facilities had an overall negative impact on newborn survival.[6] When used appropriately for women with clear risk of preterm birth in settings which can provide adequate care to preterm newborns, ACS is one of the most effective interventions to reduce deaths from prematurity.

FAQ	Antenatal Corticosteroids
What it is…	Dexamethasone injection is the preferred ACS because it is a more widely available, less expensive drug. Betamethasone is equally effective and can also be used.[8]
How it works…	Speeds fetal lung maturity through the increased production of natural surfactant. Also has protective effect on cerebral and intestinal blood vessels.
How it helps…	Preterm babies do not have enough surfactant, which helps the lungs expand, and therefore they commonly develop RDS. ACS help the fetus produce more surfactant and suffer less from severe RDS. ACS also reduces the chance of intraventricular cerebral hemorrhage and necrotizing enterocolitis.
Who should get it…	Women between 24-34 weeks GA who have one of the four conditions likely to lead to preterm birth in the next 7 days (preterm labor, preterm prelabor rupture of membranes, antepartum hemorrhage, severe pre-eclampsia/eclampsia) and who are being cared for in facilities where adequate care is available for preterm newborns (e.g. resuscitation, Kangaroo Mother Care, adequate feeding support, treatment of infection)
How it is given…	Dexamethasone (or betamethasone) 24mg IM in divided doses. A schedule of 12mg IM every 12 hours x 2 is recommended for ease of administration but other regimens are also acceptable.
When it is given…	Upon identification of a condition that can lead to preterm birth. Maximum benefit is seen 48 hours after the first injection. Incomplete regimens, however, can still be beneficial.
What the precautions are…	Dexamethasone should not be given if intra-amnionic infection, such as chorioamnionitis is suspected. In addition, it should only be given in facilities that can provide adequate care for the preterm newborn and when providers are reasonably certain that the gestational age is less than 34 weeks. Delivery should never be delayed to complete the ACS course in cases where it is necessary for the safety of the mother or fetus, such as acute antepartum hemorrhage or worsening pre-eclampsia. Additional insulin may be required if given to women with diabetes, and women on chronic steroids may need a stress dose of their steroids at the time of delivery.
Who should administer it…	The decision to give ACS is typically made by a skilled birth attendant. The injection can be administered by personnel trained to give injections.

What Is Required to Implement a Program for Administration of Dexamethasone?

To implement dexamethasone as part of PTB management, health systems need:

- National policies and clinical guidelines understood and used at all levels of the health care system.
- Inclusion of dexamethasone in the scope of work of skilled birth attendants managing threatened PTB
- Consistent availability of dexamethasone.
- Human and resource capacity to ensure safe quality service delivery.
- Effective systems to support monitoring the coverage of dexamethasone and associated outcomes.

ACS should only be given in facilities which have the ability to:

1. Assess gestational age (GA) with reasonable accuracy
2. Diagnose conditions that lead to preterm birth and determine risk of imminent preterm birth
3. Adequately care for preterm newborns, through provision of Kangaroo Mother Care, immediate resuscitation, thermal stabilization, feeding support and infection prevention
4. Reliably, timely and appropriatly identify and treat maternal infection

Conclusions

When used appropriately, use of ACS is a proven therapy that is inexpensive and appropriate to reduce mortality and morbidity associated with prematurity. ACS are often under-utilized, but this can change through collaborative efforts between policymakers, healthcare professionals and communities and can have lasting impact on the rate of survival of newborns worldwide. ACS can and should be implemented in district and tertiary level hospitals where the above conditions can be met.

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