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### Preventing newborn deaths due to prematurity

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Preterm births (PTBs), defined as births before 37 weeks of gestation account for the majority of deaths in the newborn period.

Prediction and prevention of PTB is challenging. A history of preterm labour or second trimester losses and accurate measurement of cervical length help to identify women who would benefit from progesterone and cerclage. Fibronectin estimation in the cervicovaginal secretions of a symptomatic woman with an undilated cervix can predict PTB within 10 days of testing.

Antibiotics should be given to women with preterm prelabour rupture of membranes but tocolysis has a limited role in the management of preterm labour. Antenatal corticosteroids to prevent complications in the neonate should be given only when gestational age assessment is accurate PTB is considered imminent, maternal infection and the preterm newborn can receive adequate care. Magnesium sulphate for fetal neuroprotection should be given when delivery is imminent.

After birth, most babies respond to simple interventions essential newborn care, basic care for feeding support, infections and breathing difficulties. Newborns weighing 2000 g or less, benefit from KMC. Babies, who are clinically unstable or cannot be given KMC may be nursed in an incubator or under a radiant warmer. Treatment modalities include oxygen therapy, CPAP, surfactant and assisted ventilation.

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## Introduction

Considerable success has been achieved in reducing deaths among children <5 years of age, but progress towards achievement of the fourth Millennium Development Goals (MDG) has been hampered by slow decline in neonatal mortality. If Sustainable Development Goals 3 (SDG 3) is to be attained, it is imperative that the determinants of neonatal mortality are addressed.

One of the most important predictors of an infant's subsequent health and survival is the period of gestation at birth [1]. Preterm birth (PTB), defined as birth before 37 weeks of gestation, is the leading cause of neonatal death and the second leading cause of deaths among children under the age of 5 years (2). Subcategories of PTB, based on gestational age (GA), are as follows: (1) extremely preterm (<28 weeks), (2) very preterm (28 to <32 weeks) and (3) moderate to late preterm (32 to <37 weeks). Outcomes are inversely related to GA. Globally, every year approximately 15 million babies, or one in ten, are born prematurely. More than a million babies die due to complications of PTB. Prematurity also renders these babies more prone to serious illness, lifelong disability and poor quality of life.

Countries in Africa and Asia account for >60% of global PTBs. Other major causes of neonatal mortality and morbidity in low- and middle-income countries (LMICs) are infections, birth asphyxia and low birth weight.

### Facts about preterm births

- Fifteen million preterm births are recorded every year and the number is still rising
- Nearly, 1.1 million babies die from preterm birth complications
- Preterm birth rates vary from 5% to 18% among the 184 countries where estimates are available
- More than 80% of preterm births occur between 32 and 37 weeks of gestation; most of these babies can survive with essential newborn care
- >75% of deaths following preterm births can be prevented without intensive care

Accurate estimation of GA is still a challenge in poor-resource settings where women do not avail antenatal care early in gestation. Unfortunately, optimal care of a preterm neonate, which is vital in preventing neonatal morbidity and mortality, may be expensive and unaffordable in under-resourced settings.

About 80% of preterm deliveries are the result of spontaneous labour or preterm rupture of membranes while the other 20% [2] are 'indicated' PTBs where the fetus is delivered to prevent maternal or fetal morbidity and mortality.

Intrauterine inflammation associated with microbial infection, uterine vascular compromise or decidual haemorrhage brings about preterm labour. The complex processes involved in the pathogenesis of preterm labour with interlinked roles of the cervix, amnion, chorion, myometrium, placenta and the fetus have been called the preterm parturition syndrome [3]. Despite good research spanning over many decades, a lucid understanding of the pathogenesis of preterm labour that could contribute to its prevention is still lacking [4]. Table 1 has a comprehensive list of the environmental and epidemiological risk factors for preterm labour.

Currently, interventions to reduce PTB have been classified as primary, secondary and tertiary prevention [4]. Preventing PTB in low-risk women is a primary intervention, while preventing PTB in high-risk women and early established preterm labour could be classified as secondary and tertiary interventions, respectively.

## Prediction of preterm labour

The most useful and commonly recommended predictors other than history of PTB or second trimester loss are discussed below.

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