

# Review Article

## Prematurity Management- Needs Priority Attention

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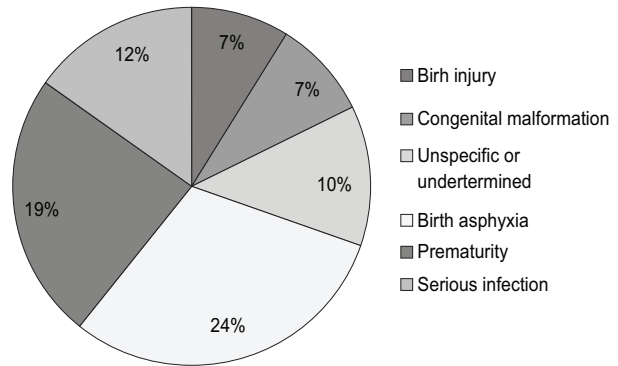
### Introduction:

Prematurity (babies born before 37 completed weeks of gestation) is prevalent all over the world. About 15 million premature babies are born globally each year.<sup>1</sup> and this number is rising. The incidence varies worldwide from 5% to 19% of births.

Causes of pre-term births include multiple pregnancies, young, teen-age mothers, frequent births, poor antenatal care, chronic conditions like diabetes, hypertension, infections, etc. About 60% of total pre-term births occur in the developing countries with poor antenatal care. Most preterm births happen spontaneously, but some are due to early induction of labour or caesarian birth for medical or non medical reasons. Causes are not apparent in many cases, may have genetic influence. According the total number of births, United States is in the 6th position and Bangladesh in the 7th position globally, India being at the top.<sup>2</sup>

Preterm births along with its complication is the leading cause of under-5 mortality and has been responsible for about one million deaths in 2015.<sup>3</sup> Almost similar number of survivors face life-time disability like learning, visual, hearing, cognitive problems and are also more likely to suffer from problems like asthma, pneumonia, meningitis.<sup>4</sup> Problems of premature births include: maintenance of body temperature due immature skin, lack of protective vernix, increased body surface area, etc. Feeding problems due to lack of coordinated suck-swallow. Increased susceptibility to infections. Respiratory, neurological, ophthalmological, haematological, gastrointestinal problems.

**Keywords:** Prematurity, low birth weight, kangaroo mother care.



Source: BDHS 2017

### Management of the preterm babies:

**Thermal care:** Immediate drying, wrapping and direct skin to skin contact has proved to improve pre-term survival with a better long term outcome.

### Kangaroo Moher Care (KMC).

KMC was developed in 1970s by a colombian pediatrician Edgar Rey seeking a solution to incubator shortage, high infections and abandonment among preterm births. The premature baby is put in early, prolonged and direct skin to skin contact with the mother or another family member to provide stable warmth and to encourage frequent, exclusive breast feeding.<sup>5</sup> A systematic review and meta analysis of several randomized controlled trials found that KMC its associated with a 51% reduction in neonatal mortality for stable babies weighing less than 2000gms. Cochrane review also reported a 40% reduction in the post discharge mortality, about a 60% reduction in neonatal infections and an almost 80% reduction in hypothermia. Other benefits included increased breast feeding, weight gain, mother-baby bonding and better developmental outcomes.<sup>6</sup>

We started KMC in Dhaka Shishus Hospital with some WHO support in 2013, being next to LAMB hospital and ICDDR, B in Matlab. We reported a short study in our unit. The results were encouraging. In this study, comparison of 40 KMC babies with 40 control showed that rate of weight gain per day in KMC group was

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18.1±7.7gms and in control group, it was 13.0±4.5 gms ( $p < 0.001$ ). Apnea occurred less in KMC group (8% vs. 15%) ( $p=0.23$ ) and episodes of hypothermia was also recorded less in KMC group (10% vs 18%) ( $p=0.21$ ). Culture positive sepsis was 15% in KMC group and 20% in control group ( $p=0.56$ ). The mean time to achieve full enteral feed in KMC group was 9.1±2.4 days and 14.7±4.5 days ( $p < 0.001$ ) in control group. Ninety percent of KMC and 60% of control group babies were discharged with exclusive breast feeding ( $p=0.002$ ). The rest received cup feeding along with the breast feeding. In this study mean hospital stay was 15.6 ± 10.6 days vs 18.2 ± 4.5 days, in KMC and control group respectively that was statistically insignificant,  $p=0.15$ . The mortality was 2(5%) in KMC group and those was 6 (15%) in control group and that was also statistically insignificant ( $P=0.14$ ).<sup>7</sup>

These findings convinced the government to initiate KMC at other institutions and gradually planning to scale up. At present 266 KMC facilities are functioning in our country.<sup>8</sup> Further scale up, proper supervision and monitoring will hopefully contribute a lot to the reduction of newborn deaths.

#### **Feeding support:**

Early initiation of breastfeeding within one hour after birth has been shown to reduce neonatal mortality.<sup>9</sup> Premature babies benefit from breast milk nutritionally, immunologically and developmentally.<sup>10</sup> There is also lower incidence of necrotising enterocolitis and improved neuro-developmental outcomes. Babies below 1300g will need intravenous fluid for some period and step-wise enteral feeding can be established in most cases with proper monitoring. **Necrotising enterocolitis** often leads to fatality and more common with formula-feed babies.<sup>11</sup>

#### **Skin care:**

The skin of premature babies is more vulnerable, and is not protected by vernix like a term baby's. Topical application of emollient ointment such as sunflower oil reduces water loss, dermatitis and risk of sepsis and has been shown to reduce mortality of the preterm babies in study of Dhaka Shishu Hospital and also in Egypt.<sup>12</sup>

#### **Cord Clamping:**

Another effective and low cost intervention is appropriate timing for clamping of the umbilical cord- waiting 2-3 minutes or until the cord stops pulsating, whilst keeping the baby below the level of the placenta.

For preterm babies this reduces the risk of intracranial bleeding and need for blood transfusions as well as later anemia.<sup>13</sup>

#### **Respiratory Support:**

Respiratory Distress Syndrome (RDS) or Hyaline Membrane Disease due to lack of surfactant in the lungs is common in pre-terms and its severity is proportional to the degree of prematurity.

**Antenatal use of corticosteroids** (two doses of 6mg, inj. Dexamethasone 12 hours apart prior to delivery) has proved to reduce the incidence of RDS, especially in settings where aseptic delivery and newborn care facility is available. Scaling up of this in our country is under evaluation. Hopefully, this will improve the survival of our preterm babies.

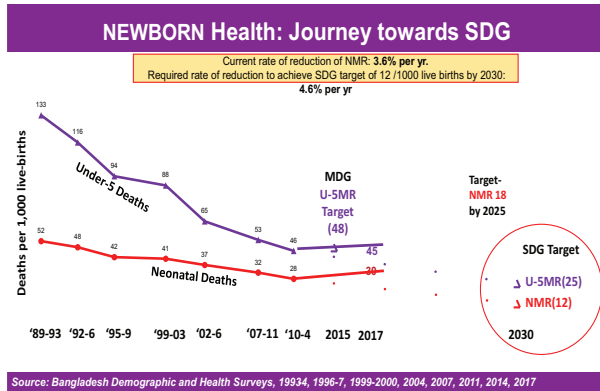
**Surfactant**, although costly is being used in several of our neonatal units with beneficial result. There should be efforts to make this product more affordable.

**Apnoeas:** Recurrent apnoeas are also common in the preterms due to immaturity of respiratory centers. Inj. Amminophyline is usually used now, but better drug caffeine sulphate (Neocafen inj, ) is now available in our country and we should better use this drug to manage apnoea of prematurity.

Use of continuous positive air way pressure (CPAP) during resuscitation and for the respiratory support with optimum use of oxygen helps in the management of respiratory problems and hypoxia. This method is now being used in many of our govt. and private facilities. All new-born physicians and nurses should be well-versed with its usage & problems. Early results show 67% of babies on CPAP survived compared to 24% without CPAP but on oxygen.<sup>14</sup>

**Jaundice** is more common and appears early in the premature due to immaturity of the bilirubin metabolism in the liver and the bilirubin may cross blood brain barrier at a lower level than that in the term babies. So, early initiation of phototherapy and monitoring is necessary. This facility must be ensured at all levels where preterm babies are taken care of.

**Retinopathy of prematurity (ROP)**, due to abnormal proliferation of the vessels in the retina, is being encountered in our country more and more because of the increased survival of the preterm babies. There is high chance of missing cases with the untoward effect of blindness or visual problems if ROP screening is not done at appropriate time.



An incidence of ROP in 35% of preterm babies below 34 weeks & weight below 1800gm was found in Dhaka Shishu Hospital newborn-unit from July 2013 to July 2014.<sup>15</sup>

We have seen ROP in babies with a relatively higher birth weight like 1600 to 1800 gms where risk factors were sepsis and repeated blood transfusions along with the prolonged oxygen therapy. Proper Counseling for retinopathy screening is mandatory. All district hospitals should have facility for ROP screening and management of the retinopathy.

**Bronco-pulmonary dysplasia:** Prolonged use of ventilation support with oxygen is responsible for this problem. Minimal ventilatory support with proper oxygen monitoring is necessary to reduce this complication.

**Infection Prevention:**

Meticulous hand washing is mandatory before handling each baby. Clean birth-kits must be used in outside deliveries. Single chlorhexidine application to cord has to be practiced everywhere after birth. This will also deter use of harmful substances over the umbilicus.

**Neurological Problems:**

**Intra-ventricular hemorrhage (IVH):** About 1 in 5 babies below 2000gm is affected with IVH due to RDS, hypoxia, hypotension, vascular instability of the capillary vascular bed. **Periventricular leucomalacia (PVL)** is also common due to the hypoxic brain injury.

Rate of the reduction of neonatal mortality has to be accelerated from 3.6% to 4.6% per year in order to achieve SDG goal of 12 newborn deaths per thousand live births in 2030.<sup>16</sup>

**Conclusion:**

Majority (about 80%) of the pre-term babies are late pre-terms between 32 to 37 weeks of gestation and they can be managed and saved by simple, cost-effective post-natal care along with essential care during birth. Other two major causes of newborn deaths- birth asphyxia and sepsis are more easily controllable. Prematurity management needs long term wider program from marital counseling, birth spacing, proper antenatal care to low cost newborn cares at all levels. We must keep in mind that still about 50% of the pre-term babies are being born outside the facilities. Evidence based interventions with appropriate training of doctors, nurses and their availability at the district and sub-district levels will hopefully ensure better survival of our neonates to achieve the goal.

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