

## EDITORIAL

# Mother-Neonatal Care Unit (MNCU): Innovative Concept into Practice to Reduce Neonatal Mortality

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Worldwide each year an estimated 15 million newborns are born preterm and about 20 million are born low birth weight.<sup>1,2</sup> Most of them are born in low and middle-income countries (LMICs) including Bangladesh. Out of all cause newborn death 70% are due to prematurity and low birth weight. Also they have an increased risk of developing illnesses requiring care inside the newborn care unit. Thus reducing mortality among these babies is the key to achieving the United Nations Sustainable Development Goals (SDG) target of reducing newborn mortality to as low as 12 deaths per 1000 live births by 2030.<sup>3-5</sup>

Among the most, Kangaroo Mother Care (KMC) is an effective and well proven intervention for preventing morbidity and mortality of LBW babies, thus reducing neonatal mortality rate (NMR).<sup>6</sup> As a routine care for LBW babies, WHO recommended KMC when the newborn's clinical condition has stabilized<sup>7</sup>, which is normally achieved 3 days after birth. A 40% reduction of mortality was evident with implementing KMC initiation after stabilization.<sup>8</sup> However, approximately 45% of newborn deaths occur within 24 hours of birth.<sup>9</sup> Thus, majority of deaths among low birth weight babies typically occur before initiation of KMC. To reduce mortality of these newborn the proof of effectiveness of initiating KMC immediately after birth and before stabilization (iKMC) was only available recently after a multicountry, randomized, controlled trial coordinated by WHO, published in 2021.<sup>10</sup> During iKMC intervention study, mothers need to be stay in NICU to provide continuous KMC throughout 24 hours against the current practice of separating sick newborns from their mothers. This directed to restructure the existing NICU to accommodate

mother to stay with her baby and led to development of "Mother-Newborn Care Unit (MNCU)".

MNCU is a very new concept to take care small and sick newborn with their mothers. Study of iKMC implementation through MNCU evident mortality reduction by 25% compared to conventional KMC implemented using the routine service delivery mechanism.<sup>10</sup> This point toward that if this model of care is adopted, at least 1,50,000 newborn deaths can be prevented globally every year. This study also shown that babies in MNCU had 35% less incidence of low temperature and 18% less infections as compared to babies cared in conventional NICU.<sup>10</sup>

Mother-newborn care unit (MNCU) or mother-newborn intensive care unit (M-NICU) is an area inside the hospital where sick and small newborns will be cared for by their mothers on a 24×7 basis. MNCU/M-NICU will provide all services of level II newborn care and postnatal care to mothers. The infrastructure of MNCU/M-NICU include a bed and a clinical examination cubicle, also pantry, bathing area, and toilet for mothers. All equipment for level II intensive care including radiant warmer (required during the time the mother/surrogate could not provide KMC), CPAP machine, oxygen and suction facilities, vital monitor and phototherapy unit to treat and take care of newborn. Postnatal care to mother will be provided inside the MNCU by obstetricians and neonatal nurses trained to provide essential postnatal care to mothers.<sup>11-13</sup>

In MNCU mother as a resident and care-giver, can participate actively and contribute in neonatal care through providing feeding by giving expressed breast milk and establishment of exclusive breastfeeding early; participate in routine care of baby including changing diapers, monitoring the babies on

intravenous fluids, phototherapy; and providing prolonged, continuous, effective KMC for as long as 16-17 hours per day, thus providing family-centered care to newborns. Also health care providers can educate mother about healthy practices of neonatal care to take care her baby after discharge and can identifying danger signs at home. With advantages there are challenges in the MNCU, includes providing respiratory support in the KMC position<sup>14</sup> and practising continuous KMC in absence of the mother due to her medical reasons or when the baby need medical treatment. These should be solved with the help of family and with the creativity of healthcare professionals.<sup>12,14</sup>

Bangladesh exhibits a significant reduction in the under 5 mortality from 2011 to 2022. However, the decline rate of neonatal mortality lag behind that of post natal mortality. So, the proportion of neonatal deaths relative to all under 5 deaths has increased from 58% in 2011 to 65% in 2022. Current rate of reduction of NMR is 3.6% per year but the required rate of reduction is 4.6% per year to achieve SDG target.<sup>15</sup> So, to attain the SDG of reducing neonatal mortality by 2030, we must intensify our efforts to reduce neonatal deaths. In Bangladesh among the causes contributing to neonatal mortality 32% contributed by complications of prematurity and low birth weight.<sup>15</sup> In country like Bangladesh facility based quality newborn care is a great challenge where skilled human resource shortage is a major hindrance. To achieve the required rate of reduction of NMR, we need to review the strategies to deliver accessible and quality care for small and sick babies in health care facilities. The Government of Bangladesh (GoB) has implemented WHO KMC protocol for the management of preterm and LBW neonates.<sup>16</sup> In health sector program KMC was identified as a key component of the Comprehensive Newborn Care Package (CNCP) and national scale-up targets established.<sup>17</sup> Upazila Health Centers (UHCs) giving KMC services from 2016, and now total 450 UHCs are providing KMC services. Utilisation of KMC services has increased but still very low.<sup>18</sup> The GoB has also established Special Care Newborn Units (SCANU) supported by various developmental partners.<sup>19</sup> from 2011 and 59 SCANU facilities spread across 50 districts to provide the healthcare needs of small and sick newborns. Coverage, compliance and follow-up are the major challenges for SCANU and KMC service

implementation success.

In this situation it is needed to incorporate 2022 WHO guideline on KMC in our National Guidelines, integrate iKMC into health system and make scope for iKMC implementation research in our setup. In order to implement iKMC through MNCU we need reorganization of infrastructure; new SNCUs and NICUs should be designed with all the provisions for mother to stay in MNCU and should adopt this new design when renovating already functional NICUs and SNCUs. Also health sector should need certain policy changes to allow mothers and family members to be in NICUs 24/7, obstetric rounds inside MNCU and giving essential care to mothers in MNCU by neonatal nurses. Paediatricians, obstetricians and policymakers need to be taken into confidence and convinced of the benefits and feasibility of MNCUs for this model shift in care of small and sick newborns. It also need to involve Paediatrics and Obstetrics departments to create strong collaboration between them for implementation and success of this program. Fortunately GoB agreed to start MNCU as M-SCANU in smaller scale and gradual countrywide implementation. Hope this new beginning will lead us to reach the goal of reducing newborn mortality.

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