WHO recommendation on intermittent Kangaroo mother care for preterm neonates, if continuous Kangaroo mother care is not possible

17 November 2015

**Recommendation**

Newborns weighing 2000 g or less at birth should be provided as close to continuous Kangaroo mother care as possible.

Intermittent Kangaroo mother care, rather than conventional care, is recommended for newborns weighing 2000 g or less at birth, if continuous Kangaroo mother care is not possible.

(_Strong recommendation based on moderate-quality evidence_)

**Publication history**

**First published:** November 2015

**Updated:** No update planned

**Assessed as up-to-date:** November 2015

**Background**

Preterm birth, defined as birth before 37 weeks of gestation, is the single most important determinant of adverse infant outcomes, in terms of survival and quality of life. (1) Globally, it is the leading cause of perinatal and neonatal mortality and morbidity. (2) Preterm infants are particularly vulnerable to complications due to impaired respiration, difficulty in feeding, poor body temperature regulation and high risk of infection. (3-5) With the increasing contribution of neonatal deaths to overall child mortality, it is critical to address the determinants of poor outcomes related to preterm birth to achieve further reductions in child mortality. (6-8)

Infant mortality and morbidity from preterm birth can be reduced through interventions delivered to the mother before or during pregnancy, and to the preterm infant after birth. (9) Interventions can be directed at all women for primary prevention and reduction of the risk of preterm birth (e.g. smoking cessation programme) or aimed at minimizing the risk in women with known risk factors (e.g. progestational agents, cervical cerclage). (10) However, the most beneficial set of maternal interventions are those that are aimed at
improving outcomes for preterm infants when preterm birth is inevitable (e.g. antenatal corticosteroids, magnesium sulfate and antibiotic prophylaxis). (9) Special care of the preterm newborn to prevent and treat complications of prematurity is also critical to newborn survival. In high-income countries, reductions in mortality rates in infants that were born preterm have been driven largely by improved care and, more importantly, by appropriate policy changes.

Methods

The recommendations were developed using standard operating procedures in accordance with the process described in the WHO handbook for guideline development (11). Briefly, these included (i) identification of priority questions and critical outcomes, (ii) retrieval of the evidence, (iii) assessment and synthesis of evidence, (iv) formulation of recommendations, and (v) planning for the dissemination, implementation, impact evaluation and updating of the guideline.

The scientific evidence underpinning the recommendations was synthesized using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach (12). Up-to-date systematic reviews were used to prepare evidence profiles for the priority questions. WHO then convened a Technical Consultation in May 2014 where an international group of experts – the Guideline Development Group (GDG) – formulated and approved the recommendations based on the evidence profiles.

In November 2014, an online consultation of the GDG was conducted to review and revise the recommendations in the light of the findings of a large implementation trial of antenatal corticosteroids in low-resource countries.

Further information on procedures for developing this recommendation are available here.

Recommendation question

For this recommendation, we aimed to answer the following question:

- Among preterm babies who require thermal care (P), is practicing Kangaroo mother care (I) compared with conventional care (C), effective in reducing adverse newborn outcomes (O)? If so:
  - How effective is continuous Kangaroo mother care (KMC) in the thermal care of preterm babies?
  - Is KMC equally effective when administered intermittently rather than continuously, with or without alternative conventional methods of care during the intervention periods?
  - In which subgroup of preterm newborns is KMC effective? (considering babies weighing < 2000 g; sick and unstable babies, with respiratory distress, feed intolerance, etc.)

Evidence summary

Continuous or intermittent Kangaroo mother care (KMC) versus conventional care:

The Cochrane review summarized data on effectiveness by subgroups of studies that had used either continuous or intermittent KMC (13). Continuous KMC is defined as the practice of skin-to-skin care continuously throughout the day without breaking the contact between mother and baby, while intermittent KMC is the practice of skin-to-skin care alternated with the use of either a radiant warmer or an incubator.
Care for the baby.

Continuous KMC practice versus conventional care:

Five trials evaluated the effect of continuous KMC practice on neonatal mortality or severe neonatal morbidity.

**Neonatal death:** Continuous KMC was associated with a 40% lower risk of mortality at the time of discharge or at 40–41 weeks postmenstrual age compared to conventional care (RR 0.60, 95% CI 0.39–0.92; 3 studies, 1117 babies). Continuous KMC was also associated with a 33% reduction in the risk of mortality at the latest follow-up contact, compared with conventional care (RR 0.67, 95% CI 0.46–0.98; 4 studies, 1384 babies).

**Severe neonatal morbidity:** Only one trial (663 babies) reported the effects of continuous KMC on severe infection at the latest follow-up and the finding was inconclusive (RR 0.69, 95% CI 0.43–1.12). One study reported on the risk of nosocomial infections until the time of discharge or 40–41 weeks postmenstrual age: there was a 51% lower risk with continuous KMC compared to conventional care (RR 0.49, 95% CI 0.25–0.93). The evidence of effectiveness of continuous KMC in terms of reducing the risk of readmission was inconclusive (RR 0.60, 95% CI 0.34–1.06).

Intermittent KMC practice versus conventional care:

Thirteen of the 18 identified trials in the main review implemented intermittent KMC.

**Neonatal death:** From five studies involving 619 babies, there was inconclusive evidence regarding the benefit of intermittent KMC for reducing mortality up to the time of discharge or 40–41 weeks postmenstrual age, compared with conventional care (RR 0.59, 95% CI 0.19–1.81). Seven trials with 783 preterm babies also showed inconclusive evidence of reduction in the risk of mortality at the latest follow-up (RR 0.68, 95% CI 0.26–1.77).

**Severe neonatal morbidity:** All the studies that reported the effects of KMC on hypo- and hyperthermia used intermittent KMC. There was a 66% lower risk of hypothermia at the time of discharge or at 40–41 weeks postmenstrual age (RR 0.34, 95 CI 0.17–0.67), but no significant reduction in the risk of hyperthermia (RR 0.79, 95% CI 0.59–1.05). Compared with conventional care, intermittent KMC was associated with a 55% lower risk of severe infection at the latest follow-up visit (RR 0.45, 95% CI 0.28–0.73; 6 studies, 680 babies) and 61% lower risk of nosocomial infections at the time of discharge or at 40–41 weeks postmenstrual age (RR 0.39, 95% CI 0.16–0.67; 2 studies, 250 infants).

Further information and considerations related to this recommendation can be found in the WHO guidelines, available at:

http://apps.who.int/iris/bitstream/handle/10665/183037/9789241508988_eng.pdf?sequence=1

http://apps.who.int/iris/bitstream/handle/10665/183038/WHO_RHR_15.17_eng.pdf?sequence=1

Implementation considerations

- The successful introduction of this recommendation into national programmes and health-care services
depends on well-planned and participatory consensus-driven processes of adaptation and implementation. The adaptation and implementation processes may include the development or revision of existing national guidelines or protocols based on this recommendation.

- The recommendation should be adapted into a locally appropriate document that can meet the specific needs of each country and health service. Any changes should be made in an explicit and transparent manner.
- A set of interventions should be established to ensure that an enabling environment is created for the use of the recommendations, and that the behaviour of the healthcare practitioner changes towards the use of this evidence-based practice.
- In this process, the role of local professional societies is important and an all-inclusive and participatory process should be encouraged.

**Research implications**

The GDG identified that further research on the following high-priority questions is needed:

- What is the optimal frequency of follow-up for mothers providing KMC after discharge from the health-care facility?
- What is the minimum threshold of KMC exposure needed to achieve an impact on neonatal mortality and other important outcomes?
- Can KMC be effectively initiated in the community setting in LMICs?

**Related links**

WHO recommendations on interventions to improve preterm birth outcomes (2015) –[full document](#) and [evidence tables](#)

Supporting systematic reviews:

[Conde-Agudelo A, Diaz-Rossello JL. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database of Systematic Reviews 2014, Issue 4](#)

Other links of interest

[Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors](#)

[Pregnancy, Childbirth, Postpartum and Newborn Care: A guide for essential practice](#)

[WHO Programmes: Sexual and Reproductive health](#)

[Maternal Health](#)

[Infant, Newborn Health](#)

**References**

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