Management for risks of hypothermia and hypothermia in NICUs

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EPScale PTB/LBW TWG
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Thermal Management
Prevention of hypothermia

“Warm Chain” (WHO, 1997)
• Warm delivery room
• Immediate drying
• Skin-to-skin
• Early and exclusive breastfeeding
• Delayed bathing
What is Kangaroo Mother Care?

1. Early, continuous and prolonged skin-to-skin contact between the mother and the baby;
2. Exclusive breastfeeding or breast milk feeding;
3. Early discharge after hospital-initiated KMC and continuation at home;
4. Adequate support and follow-up
Kangaroo mother care is recommended for the routine care of newborns weighing 2000 gm or less at birth, and should be initiated in health-care facilities as soon as the newborns are clinically stable.

Newborns weighing 2000 gm 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 gm or less at birth, if continuous Kangaroo mother care is not possible.
KMC Evidence
Most recent Cochrane review (2014): 18 studies

KMC reduced *mortality* risk by 40% in stabilized < 2kg newborns compared to conventional care.

- Reduced hypothermia by 66%
- Reduced nosocomial infection by 55%
- Reduced hospital stay by 2 days
- Increased breastfeeding, growth, and early infant attachment

KMC Evidence

Most recent meta-analysis (2016): 124 studies

124 studies (7 LIC, 65 MIC, 48 HIC)
36% lower risk of mortality for LBW infants receiving KMC as compared to conventional care (*in the same setting*)

Significant reductions in:
- Hypothermia
- Hypoglycemia
- Hospital re-admission

Significant gains in:
- Exclusive breastfeeding*
- Oxygen saturation
- Temperature stability
- Head circumference

Boundy et al. Pediatrics 2016
Results – KMC Reduces Mortality and Morbidity (Relative Risk (95% CI))

- Mortality at latest follow up time: 0.77 (0.60 to 0.99)
- Mortality for LBW infants: 0.60 (0.44 to 0.83)
- Exclusive Breast Feeding: 1.50 (1.26 to 1.78)
- Infection: 0.67 (0.43 to 1.05)
- Sepsis: 0.53 (0.34, 0.83)
- Hypothermia: 0.22 (0.12 to 0.41)
### Results – KMC Reduces Mortality and Morbidity (Summary Means)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
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<tbody>
<tr>
<td>Mean Heart Rate (bpm)</td>
<td>-0.41 (-2.25 to 1.42)</td>
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<tr>
<td>Mean Respiratory Rate (breaths/min)</td>
<td>-3.17 (-5.15 to -1.19)</td>
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<tr>
<td>Mean Oxygen Saturation (%)</td>
<td>0.90 (0.35 to 1.45)</td>
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<tr>
<td>Mean Temperature, (°C)</td>
<td>0.24 (0.15 to 0.33)</td>
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<tr>
<td>Weight Gain (g/d)</td>
<td>2.58 (-0.51 to 5.67)</td>
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<tr>
<td>Pain Score (Premature Infant Pain Profile Scale)</td>
<td>-1.04 (-1.95 to -0.14)</td>
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<tr>
<td>Length of Hospital Stay (days)</td>
<td>-0.68 (-2.11 to 0.75)</td>
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</table>
Professional Associations’ Joint Statement endorsing KMC

Purpose: To address health care professional incorrect perceptions of KMC as sub-standard care or “poor man’s medicine” for preterm and LBW babies.

Endorsements completed or underway from: AAP, IPA, ACOG, ACNM, FIGO, ICN, COINN, EP-UNEPSA, RCPCH

Provides summary of evidence available in LIC, MIC, and HIC

Endorses KMC as beneficial to preterm and LBW babies in ALL settings (LIC, MIC, HIC), albeit with less marginal benefits on mortality in highest income settings
Major challenges in thermal management

- Initial management – highest risk
  - Routine immediate thermal care for all babies (STS)
  - Thermal management for “unstable” newborns
    - Skin-to-skin (?): research on *immediate parental skin-to-skin* before/during “stabilization”
  - Thermal care during transport – need for standards, written protocols
    - Delivery room to NICU
    - Referral transport
- NICU care
  - Trained and equipped staff, standard thermal care protocols
  - Maintaining basic (thermal) care with greater specialized care (eg, CPAP)
Thermo-protective devices: risk vs harm?

Potential gaps: before stabilization, during transport, STS/KMC caregiver not available
- Incubators/radiant warmers – affordability, electricity, maintenance, risk of over-heating/hyperthemia
- Lo-tech: warming mattresses, plastic wraps/bags
- Alternative devices: Embrace (?)
Questions?

THANK YOU

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