The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynyk and Fineout-Overholt (2011).

I  Evidence obtained from a systematic review of all relevant randomised control trials.

II Evidence obtained from at least one well designed randomised control trial.

III Evidence obtained from well-designed controlled trials without randomisation.

IV Evidence obtained from well designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case-series

V Evidence obtained from systematic reviews of descriptive and qualitative studies

VI Evidence obtained from single descriptive and qualitative studies

VII Expert opinion from clinicians, authorities and/or reports of expert committees or based on physiology


<table>
<thead>
<tr>
<th>Reference</th>
<th>Evidence level (I-VII)</th>
<th>Key findings, outcomes or recommendations</th>
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</thead>
<tbody>
<tr>
<td>Auckland District Health Board Newborn Services Clinical Guideline (2007) 'Kangaroo Care'.</td>
<td>VII</td>
<td>• Safe transfer process into SSC</td>
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<td>DiMenna, L (2006) 'Considerations for Implementation of a Neonatal Kangaroo Care Protocol', Neonatal Network, 25(6):405-412.</td>
<td>II</td>
<td>• SSC definitions, processes and benefits (for both infant and parents) – derived from literature review of RCTs • Guidelines around SSC provision are required for NICU’s to consistently offer SSC to families • Critically ill infants should not be excluded from SSC</td>
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<tr>
<td>Dodd, V (2004), 'Implications of Kangaroo Care for Growth and Development in Preterm Infants', Journal of Obstetric, Gynecologic and Neonatal Nursing, 34(2): 218-232.</td>
<td>II</td>
<td>• Review of RCT’s on SSC (Highlights the importance of NIDCAP) • Summary of SSC use around the developing and developed world • SSC promotes: Improved physiological stability, thermoregulation maintained, improved respiratory function and oxygenation when positioned upright and prone, enhanced autonomic regulation and greater weight gain. • Monitoring should continue during SSC with adjustment of the infant’s head positioning if required. • Enhanced parental-infant attachment</td>
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<td>Franck, L, Bernal, H &amp; Gale, G (2002), 'Infant Holding Policies and Practices in Neonatal Units', Neonatal Network, 21(2): 13-20.</td>
<td>IV</td>
<td>• Descriptive survey of SSC practice within American NICUs • Despite known benefits of SSC, conventional holding more commonly offered when infant the infant was unwell, ventilated or recently extubated • Staff anxieties of perceived risks and benefits dictate SSC facilitation. Guidelines and education are required to empower families and promote consistent practice.</td>
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<tr>
<td>Reference</td>
<td>Year</td>
<td>Summary</td>
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| Hunt, F (2008), 'The Importance of Kangaroo Care on Infant Oxygen Saturations Levels and Bonding', *Journal of Neonatal Nursing*, 14(1): 47-51. | VII | - Oxygen requirements, ventilator support and intravenous access should not exclude an infant from SSC  
- Oxygen requirements decrease during SSC with less frequent desaturation  
- SSC improves the NICU experience by enhancing bonding and attachment  
- Improved growth and development in infants who regularly participate in SSC |
| Karlsson, V, Heinemann, A, Sjors, G, Hedberg Nykvist, K & Agren, J (2012), 'Early Skin-to-Skin Care in Extremely Preterm Infants: Thermal Balance and Care Environment', *Journal of Pediatrics*, 161(3): 422-426. | IV | - Cohort study on thermal control during SSC on extremely preterm infants (mean GA 24\(_{14}\); mean birth weight 600g) during SSC – measurement of skin and body temperature, ambient temperature, relative humidity and evaporimetry to determine TEWL  
- Mean SSC episode 95 minutes (60-180 minutes), if umbilical lines insitu then infants held side-lying. The mean time to participate in first SSC was 5 days  
- Slight drop in skin temperatures noted during transfer, but rise during SSC and return to incubator – no differences were significant. Important to allow the SSC period to be long enough to allow the infant’s temperature to return to normal post transfer  
- Estimated IWL, although higher during SSC than in ambient humidity of incubator – unlikely that a few hours of SSC would impact fluid balance or management |
| Kledzik, T (2005), 'Holding the Very Low Birth Weight Infant: Skin-to-Skin Techniques', *Neonatal Network*, 24(1): 7-14. | VII | - Although the benefits of SSC are well documented, the practice is not encouraged enough within the NICU  
- The time invested in facilitating SSC through a safe transfer was outweighed by the time saved through the infant’s increased physiological stability  
- Step-by-step instructions to ensure parental comfort, prepare the infant, facilitate the transfer, assess during SSC and complete the practice |
• Increased temperature stability during SSC not the presumed hypothermia, even with the extremely preterm cohort  
• Infants should be vertical, upright and prone.  
• Promote maternal comfort – encourage to keep water close by and provide comfortable chairs  
• Ensure staff available to assist in transfer to and from SSC. Ensure infant is ready for SSC, suction ETT and ensure ventilator circuits are drained of condensation prior to movement.  
• Ventilator tubing should be secured over the parents’ shoulder to decrease risk of dislodgement.  
• On completion of SSC, infants demonstrate greater physiological stability  
• Guidelines required to safely transfer ventilated infants to and from SSC  
• Concerns regarding the maintenance of a patent airway are the most prominent among staff, however extubation did not occur.  
• SSC for ventilated infants should be promoted |
| Managan, S & Mosher, S (2012), ‘Challenges to Skin-to-Skin Kangaroo Care: Cesarean Delivery and Critically Ill NICU Patients’, *Neonatal Network*, 31(4): 259-261. | VII | • Summary of barriers to providing SSC for the unwell NICU infant and recommendations to overcome these.  
• Barriers may be cultural to the NICU, due to acuity, perceived risks for complication or technological restraints. SSC is often not promoted due to staff anxieties.  
• A written guideline and ongoing education should be provided for all NICU staff. Detail in promoting a safe transfer to and from SSC enhances confidence.  
• Parents should also receive relevant information and education on SSC.  
• Mirrors should be provided to parents to further facilitate interaction and bonding  
• The benefits of SSC often outweigh the potential complications |
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<th>Reference</th>
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• Essential elements surrounded being kept from knowing their baby (surrounding the interruption of maternal-infant acquaintance and unpleasantness of NICU equipment) and getting to know their baby (reassurance from staff and the provision of SSC for bonding).  
• SSC enhanced confidence, understanding of their infant’s clinical state, maternal identity and attachment.  
• Nurses play a vital role in supporting mothers’ to get to know their baby | • Criteria for SSC  
• Safe transfer of infant to and from SSC |
| Royal Women’s Hospital Clinical Guideline (2nd January 2015), ‘Kangaroo Care’. | | |