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

Melynyk, B. & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing & healthcare: A guide to best practice (2nd ed.).* Philadelphia: Wolters Kluwer, Lippincott Williams & Wilkins.

National Health and Medical Research Council (2009). *NHMRC levels of evidence and grades for recommendations for developers of guidelines* (2009). Australian Government: NHMRC. http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/evidence_statement_form.pdf

OCEBM Levels of Evidence Working Group Oxford (2011).*The Oxford 2011 Levels of Evidence*. Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=1025

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Reference ***(include title, author, journal title, year of publication, volume and issue, pages)***	**Evidence level (I-VII)**	**Key findings, outcomes or recommendations**
Auckland District Health Board Newborn Services Clinical Guideline (2007) 'Kangaroo Care'.	VII	• Safe transfer process into SSC
DiMenna, L (2006) 'Considerations for Implementation of a Neonatal Kangaroo Care Protocol', *Neonatal Network,* 25(6):405-412.	II	• 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
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.	II	• 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
Franck, L, Bernal, H & Gale, G (2002), 'Infant Holding Policies and Practices in Neonatal Units', *Neonatal Network,* 21(2): 13-20.	IV	• 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.

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^{+4}; 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

Ludington-Hoe, A, Ferreira, C, Swinth, J & Ceccardi, J (2006), 'Safe Criteria and Procedure for Kangaroo Care With Intubated Preterm Infants', *Journal of Obstetric, Gynecologic and Neonatal Nursing,* 32(5): 579-588.	IV	• Literature review on case studies • 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

Roller, C (2003), 'Getting to Know You: Mothers' Experiences of Kangaroo Care', *Journal of Obstetric, Gynecologic and Neonatal Nursing,* 34(2): 210-217.	VI	• Qualitative study of mothers' experiences during SSC with their preterm infants 32-37 weeks gestation. • 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
Royal Women's Hospital Clinical Guideline (2nd January 2015), 'Kangaroo Care'.	VII	• Criteria for SSC • Safe transfer of infant to and from SSC