NNICU/Level II Nursery
Process Standards

**Skin to Skin Contact/Kangaroo Care Holding of Premature or Critically Ill Infants 27 Weeks or More**

| Review responsibility: NNICU Director, Assistant Director, and Educator |
| Approved: NNICU Medical Director: |
| Effective date: 9/20/12 |
| Last reviewed date: |
| Team members performing: RN (including transport RN) |
| Standard applicable to: NNICU/Level II Nursery |
| Physician Order required: no |

**PURPOSE:** To outline guidelines of current evidence based practice for ventral skin-to-skin contact (kangaroo care) between an infant and his or her parent.

**Desired patient outcomes:**
1. Maintain neurobehavioral organization and physiologic stability (oxygenation, heart rate, and thermoregulation) during transfers and holding.\(^{158}\)
2. Remain free from any adverse effects associated with transfer or skin-to-skin holding of infant, such as extubation and thermal instability.\(^{157}\)
3. Begin a bonding process.
4. Improve breastfeeding outcomes.
5. Promote sleep of the parent and baby to maximize brain development.
6. Facilitate kangaroo care hands-free so that parent can do other activities while in Kangaroo Care for prolonged sessions.

**Equipment:**
1. Kangaroo Zak, patient gown or top of preference with opening on the front.
2. Rocking/Reclining chair and foot stool as indicated.
3. Privacy curtain.
4. Activities for parents while in Kangaroo Care

**Eligibility criteria:**
1. Stable neonates of 27 weeks post menstrual age or more are eligible. Stable means no deterioration of condition within 24 hours before skin-to-skin contact.
2. All neonatal lines and tubes must be well secured.
3. Neonatal respiratory support in the form of oxygen supplementation to include mechanical ventilation, vapotherm or nasal cannula is not a contraindication.
4. Parents should be educated in skin-to-skin contact process and willing to provide for at least one hour.

**Infants not eligible for skin to skin care:**

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1. Any infant with a chest tube.
2. Any infant with an intracardiac line.
3. Any infant with an arterial line.
4. Any infant who is being actively weaned from a ventilator or is 2 hours post extubation.
5. Any infant who has an acute or sudden deterioration in condition within the past 24 hours.
6. Any infant on oscillating, jet and nitric ventilation.
7. Parents with rashes or open skin lesions.
8. Any infant requiring vasopressor medications.

### Procedure Preparation

1. Educate parents about skin-to-skin contact by giving them Care Notes hand out or verbally educating them about benefits and need to provide at least 1 hour of skin-to-skin contact per session.
2. Determine parental readiness for skin-to-skin contact and obtain their agreement to provide skin-to-skin contact to their infant for a minimum of one hour.
3. Secure all lines and tubes.
4. Perform any needed procedures that may later interrupt infant holding if possible.
5. Set up rocker or recliner and footstool near incubator.
6. If infant weighs 1000 g or less or is within 1 hour of birth, dress in diaper and hat. If infant weighs more than 1000 g and is not within the first hour of life, dress in diaper (hat may overheat infant).
7. Check heart rate, respiratory rate, oxygen saturation, temperature, and assess pain score before and 15 minutes after transfer. 158

### Transfer Process

1. Transfer infant by standing (mother receives infant while standing beside incubator) or sitting (mother receives infant while sitting in recliner) method gently with arms and legs contained in midline. Type of transfer depends on parent’s comfort and ability to get in and out of the chair by himself or herself. 158

2. Transfer for intubated infant follows either a seated or a standing transfer procedure and includes checking ventilator tubing for water and ET tube for secure positioning. 142

   **Case—control studies of intubated infants who have been given 1 to 2 hours of KC have shown 1) physiologic stability as measured by heart rate, respiratory rate, SaO2, and blood pressure during KC as compared with incubator time, 21,156,159,160 2) autonomic control, 143 3) oxygen needs decrease, 144,161,162 stay as is, or increase slightly, 22,144 4) fewer apnea and bradycardia spells, 22 5) fewer or no desaturation events, 22,25 6) skin temperature remaining stable 18,144 or Increasing during KC, 163 7) decreased number of days on a ventilator, 164 8) good sleep, 22,162 and 9) an intense maternal connectedness with the infant 137,165 after pre-KC apprehension. 166 Transfer is associated with some desaturations, 18 but recovery, once in KC, is swift. 18,22

3. Place infant upright on parent’s chest between breasts or on either breast. 157
4. Cover the infant’s back with the Kangaroo Zak (or have Kangaroo Zak under infant during transfer to parent). Use a blanket or two if infant weighs less than 2000 g and less warmth is needed if weighs more than 2000 g.

5. The Kangaroo Zak will cover the infant’s back and protect from side drafts and slipping.

Kangaroo Care Position
1. Infant should be chest-to-chest, upright, inclined at approximately 30 to 40 above horizontal, and legs and arms should be in flexed position.
2. Care should be taken to position the head and neck in slight sniffing position to prevent airway obstruction.
3. If possible, position the face of the infant so that the parent can see the infant’s facial expression.
4. Assess parent’s comfort level during KC and need for a positioning device to support the infant (Figure 3).

Monitoring Vital Signs
1. Continue infant on all routine cardiorespiratory monitoring.
2. Continue pulse oximetry.
3. Monitor temperature (may be via skin probe read out on bed) before and after KC and during KC per NICU protocol (i.e., every 30 minutes) and as needed.
4. Allow infant 15 to 20 minutes after transfer to stabilize vital signs.

Nursing Implications
1. Parent should wear the Kangaroo Zak to prevent lose of midline alignment, flexion and infant safety while in Kangaroo Care. Hospital provided Kangaroo Zak tops will be washed after use in the unit. Mothers may wear a clean Kangaroo Zak every day. Kangaroo Zaks will be kept in the front of the unit where mothers are able to choose their own color and size and bring it to the bedside. Hooks are to be used between visits.
2. KC should be given for at least 1 hour to allow infant to complete 1 sleep cycle and derive benefit from KC after undergoing the potentially stressful transfer.
3. Parent–infant interaction should be uninterrupted as much as possible except for necessary nursing and/or medical care.
4. Infants who sleep during KC should be allowed to continue to sleep as long as possible.
5. The infant may be fed during KC either by mouth or by gavage.
6. Ordinary daily hygiene and cleansing of the skin is satisfactory for parents participating in KC.
7. Maintain incubator/warmer temperature during KC.
8. Suggest to lactating mother that during or after KC may be a good time to pump breasts because KC increases milk production. Mothers are encouraged to sleep while in Kangaroo Care providing there is a support person with them. Curtains may be left open if there is no one with them.
9. KC chairs may be left at the bedside along with mirrors and wiped down daily or if soiled by

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housekeeping. Mothers may unzip the side of the Kangaroo Zak and pump with assistance for prolonged sessions.

10. Fathers are encouraged to provide Kangaroo Care also with the Kangaroo Zak

### Patient/Family Education

1. Educate the family about the rationale for skin to-skin holding.\(^{157}\)
2. Provide Care Notes handouts for parent information.
3. Tell parents that a change in infant vital signs may occur during transfer but should return to baseline during KC. If vital signs do not return to baseline, they may indicate infant intolerance of KC and he or she may need to be returned to the incubator.\(^{158}\)
4. Educate parents on Kangaroo Care and the Kangaroo Zak so they can continue this intervention at home.

### What parents should do/know prior to every KC session

1. Learn the benefits of Kangaroo Care and to distinguish signs of stability of the baby (to request a kangaroo session) and warning signs of instability (to stop the kangaroo session).
2. Learn the how to wear the Kangaroo Zak for standing and sitting transfer.
3. Learn that the Kangaroo Zak can be opened just enough to allow the baby to sniff and explore the mother's breasts, for breastfeeding/pumping, and numerous medical interventions while holding.
4. Know that they may do the transfer alone, but ONLY after the training and approval of a medical professional.
5. Learn basic monitor readings, and know what and when to communicate with the staff.
6. Wear the Kangaroo Zak without anything underneath (bra, shirt, etc.) and with the zippers to the side. Over it, wear comfortable clothing that easily opens in the front or a hospital gown.
7. Remove jewelry that might come in contact with the baby.
8. Refrain from using powder, lotion or perfume on the chest before doing skin to skin care. The baby needs to feel the parent's natural scent.
9. Be free of any lesions or skin breakdown on the chest.
10. Take care of their own personal needs (food, fluids, restroom, etc.).
11. Bring a camera and ask the medical staff to take pictures and/or movies. After all, it is an important time for them.
12. With the Kangaroo Zak parents kangaroo for long periods of time, so plan accordingly. Parents are encouraged to sleep (as the baby will help the parent relax and take an effective nap), read (for them or to their children), rest, work or do a craft or scrapbook, write a journal, bring a computer/tablet/phone and watch a movie (don't forget the headphones). This is also a great time to read the manuals, books, and other resources provided by the hospital.

### Documentation

1. Document vital signs, oxygen saturation, and temperature before, during, and after KC.\(^{157}\)
2. Document infant’s state as sleep, awake, or crying before, during, and after KC session.
3. Indicate KC session start and stop times on nursing documentation.\(^{157,158}\)

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4. Write brief note indicating how infant tolerated KC including parent’s comments and reflections. Include amount of time spent in KC and education provided.\textsuperscript{157,158}

| Procedure for Ventilated Kangaroo Care |

**Before transfer**
1. Notify respiratory therapy of parents wish to provide skin-to-skin contact.
2. Place infant supine. Note infant’s tolerance to repositioning.
3. Auscultate chest, suction the endotracheal (ET) tube if needed, check security of ET tube, drain excess moisture from ventilator circuit.
4. Change diaper, place head cap, and place folded blanket under infant.
5. Wait until all physiological parameters have returned to baseline before placing the infant into KC.
6. Position KC chair beside the incubator.

Transfer from incubator into KC position (additional staff member is required)

*Note.* If the mother is comfortable, use a *standing transfer* procedure that follows; if mother is uncomfortable, transfer infant using sitting transfer technique.

**Standing transfer technique**
1. Mother stands next to the incubator.
2. Gather and free all lines by incubator door.
3. Another RN or RT supports and monitors transfer of ventilator circuit and tubing.
4. Mother leans forward and places hands under blanket, lifts, and places infant on her chest over the Kangaroo Zak.
5. Mother steps backward to chair and a nurse assists in placing the Kangaroo Zak over the baby’s back. Now that the baby is secure, the parent may use the hands to safely sit with RN close by for assistance throughout process.
6. Reconnect ventilator. Drape and loosely tape tubing over mother’s shoulder so that infant can move head without risk of extubation.
7. Make sure that infant is in full ventral skin-to-skin contact and back is covered up to the ears with the Kangaroo Zak.
8. Infant’s extremities should be in well flexed position.
9. Head/neck should be in slight sniffing position to maintain airway.
10. Auscultate breath sounds, close mother’s gown or blouse around the infant.
11. Assist mother into comfortable position with feet elevated to prevent thrombophlebitis.
12. Monitor and record VS and vent parameters at initiation, in 15 minutes, and then every 30 minutes throughout process.
13. Encourage KC for a minimum of 1 full hour to organize sleep and promote brain development.\textsuperscript{42,123}
14. Set incubator to air control to maintain appropriate NTE.

**Sitting transfer**
1. Mother sits in the chair next to incubator door.
2. Gather and free all lines by incubator door.
3. Another RN or RT supports ventilator circuit.

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4. RN closes the ends of blanket across the infant’s chest to contain the infant and to minimize physiological changes during transfer.
5. RN places hands under blanket, lifts, and places infant on to mother’s chest (Kangaroo Zak is lowered to expose the chest of the parent for easy placement of the baby).
6. Drape and loosely tape tubing over mother’s shoulder.
7. Make sure that infant is in full ventral skin-to-skin contact and back is covered up to the ears with the Kangaroo Zak.
8. Infant’s extremities should be well flexed.
9. Head/neck should be in slight sniffing position to maintain airway.
10. Auscultate breath sounds, make sure mother’s Kangaroo Zak’s zipper is fully closed.
11. Assist mother into comfortable position with feet elevated to prevent thrombophlebitis.
12. Monitor and record VS and vent parameters at initiation, in 15 minutes, and then every 30 minutes throughout process.
13. Encourage KC-vent for a minimum of 1 full hour to organize sleep, at a 30-40 degree angle and promote brain development and pulmonary function benefits.42,123
14. Set incubator to air control to maintain appropriate NTE.

**Transfer from KC-vent back to the incubator**

The process is reversed for the transfer back to incubator.

**Standing transfer**
1. Assist mother to move to front of chair with her feet on floor.
2. Support ventilator tubing.
3. Assist mother to stand with infant; be sure to secure all lines.
4. After standing, RN helps mother place infant supine in incubator while RN stabilizes ET tube and lines.
5. Support ventilator tubing and position infant in incubator.
6. Assess breath sounds to ensure ET tube placement.
7. Reset incubator to patient control.
8. Monitor infant’s VS until they return to pre-KC baseline.

**Sitting transfer**
1. Put recliner in upright position, or remove footstool in front of the chair.
2. Support ventilator tubing.
3. RN lifts infant, blanket, and all lines from mother’s chest, closing blanket around infant.
4. RN places infant in incubator in supine position.
5. Assess breath sounds to ensure ET tube placement.
6. Reset incubator to patient control.
7. Monitor infant’s VS until they return to pre-KC-vent baseline.

**Evidence Base Related to Skin to Skin Care Effects**

A - Merits application,
Summary of the Evidence and Its Rating

<table>
<thead>
<tr>
<th>KC Effects</th>
<th>Evidence Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological</td>
<td></td>
</tr>
<tr>
<td>Heart rate</td>
<td>A</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>A</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>A</td>
</tr>
<tr>
<td>Desaturations</td>
<td>B</td>
</tr>
<tr>
<td>Apnea—no change/↓ Apnea</td>
<td>A/B</td>
</tr>
<tr>
<td>Temperature</td>
<td>A</td>
</tr>
<tr>
<td>Cortisol</td>
<td>B</td>
</tr>
<tr>
<td>↑Weight gain</td>
<td>C</td>
</tr>
<tr>
<td>↓ Infections</td>
<td>A</td>
</tr>
<tr>
<td>Blood glucose</td>
<td>C</td>
</tr>
<tr>
<td>Behavioral</td>
<td></td>
</tr>
<tr>
<td>Improve sleep</td>
<td>A</td>
</tr>
<tr>
<td>↓ Crying</td>
<td>A</td>
</tr>
<tr>
<td>Analgesic</td>
<td>A</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td></td>
</tr>
<tr>
<td>↓ Milk production</td>
<td>A</td>
</tr>
<tr>
<td>↑ Exclusivity</td>
<td>A</td>
</tr>
<tr>
<td>↑ Duration</td>
<td>A</td>
</tr>
<tr>
<td>↑ Initiation</td>
<td>A</td>
</tr>
</tbody>
</table>

Readiness Assessment for Skin To Skin Care

<table>
<thead>
<tr>
<th>Assessment Parameter</th>
<th>Do Kangaroo Care</th>
<th>No Kangaroo Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vital signs</td>
<td>Within Normal limits</td>
<td>Exceeds clinical limits</td>
</tr>
<tr>
<td>Temperature</td>
<td>Normothermic</td>
<td>Hyperthermic</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>None</td>
<td>HR more than increase from baseline at rest Tachycardia due to agitation Give trial of KC with close monitoring</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>None</td>
<td>Bradycardia &gt;3 requiring stimulation last 24 hours</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Criteria</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apnea</strong></td>
<td>None or self recovery</td>
<td>Apnea episodes &gt; 3 Requiring vigorous stimulation last 24 hours</td>
</tr>
<tr>
<td><strong>Desaturation</strong></td>
<td>None or self recovery Gentle stimulation</td>
<td>Any desaturations requiring vigorous stimulation</td>
</tr>
<tr>
<td><strong>Tolerance to care</strong></td>
<td>No physiologic change with care</td>
<td>Physiologic changes with care that exceed normal Parameters</td>
</tr>
<tr>
<td><strong>Sensitivity to care</strong></td>
<td>Minimal changes with care</td>
<td></td>
</tr>
<tr>
<td><strong>Lines</strong></td>
<td>No lines</td>
<td>Any unstable or positional line, arterial line, UAC, chest tube, vasopressor medications</td>
</tr>
<tr>
<td></td>
<td>Well secured, patent, non positional PIV’s, PICC, UVC and Broviac</td>
<td></td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
<td>Stable within clinically acceptable parameters</td>
<td>Labile, hypotension, hypertension</td>
</tr>
<tr>
<td><strong>Oxygen Support</strong></td>
<td>None/Room air FiO2 &lt; 50% Stable mechanical ventilator</td>
<td>Active weaning or Increasing support</td>
</tr>
<tr>
<td><strong>Blood gases</strong></td>
<td>Within clinically acceptable parameters</td>
<td>Unstable blood gases</td>
</tr>
<tr>
<td><strong>Sepsis</strong></td>
<td>None</td>
<td>Emerging signs of sepsis</td>
</tr>
<tr>
<td></td>
<td>No emerging signs of sepsis</td>
<td>Sepsis workup in progress</td>
</tr>
<tr>
<td></td>
<td>IV antibiotic therapy but clinically stable</td>
<td>Presence of sepsis</td>
</tr>
<tr>
<td><strong>Phototherapy</strong></td>
<td>Total serum bilirubin is stable And not rising-consider using Biliblanket</td>
<td>Rising serum bilirubin 2 banks of phototherapy in use</td>
</tr>
<tr>
<td><strong>Parental Readiness</strong></td>
<td>Aware of KC effects on infant and family Requests opportunity to provide KC Appropriately dressed or changes into gown or top Able to sit for at least 60 minutes Good personal hygiene-no smoking odor No rash or skin lesions</td>
<td>Afraid or anxious about holding infant Can not provide for at least 60 minutes Has not showered, has strong body odor or smoking odor Skin lesions, rash or appears ill</td>
</tr>
</tbody>
</table>

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Nursing readiness
Aware of KC effect on infant and Family
Has mentored experience in Providing KC
Other RN or RT available to assist Has time to support parent through KC session

Unaware of KC effects No mentored experience for at least 2 sessions Unavailability of other RN or RT for assistance

Environmental support
Chairs/Gowns/Tops available No medical procedure in immediate environment

Chairs/foot stools can not be found Lack of staff support Major medical procedure on nearby infants

References
1. INK-USAD (International Network of Kangaroo Care, United States of America Division).
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Web References
• NICU Web page http://vumeo.org-KangarooCare
• General KC Web page: www. KangarooMotherCare.com

• General KC Web page: http://kangaroo.javeriana.edu.co