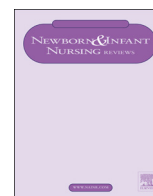




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Infant Assessment and Reduction of Sudden Unexpected Postnatal Collapse Risk During Skin-to-Skin Contact

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ABSTRACT

To encourage use of skin-to-skin contact with all healthy term infants during the first two hours of life and throughout their mothers' postpartum hospitalization, an easy, rapid newborn assessment tool, the "RAPP", has been developed to enhance labor and delivery and mother-baby nurses' ability to swiftly and accurately assess newborn physiologic condition. The "RAPP" assessment (respiratory activity, perfusion, and position) tool is being proposed as a way to swiftly evaluate infants' physiologic condition and position. Position of the infant is a key factor in minimizing risk of Sudden Unexpected Postnatal Collapse (SUPC). SUPC is an emerging complication of skin-to-skin contact and breastfeeding in the first hours and days post-birth. The "RAPP" assessment parameters and flow sheet are discussed, risk factors for SUPC are enumerated, and a checklist to prevent SUPC is presented so skin-to-skin contact can be safely provided.

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Skin-to-skin contact, also known as Kangaroo Care, has been recommended for all healthy term newborns by the American Academy of Pediatrics,¹ the American College of Obstetricians and Gynecologists,² the Centers for Disease Control and Prevention,³ and the Academy of Breastfeeding Medicine⁴ because of its numerous positive effects on infants and their families.⁵ Skin-to-skin contact's (SSC) ability to regulate the infant's temperature and prevent hypothermia and hypoglycemia has earned SSC recognition in the Neonatal Resuscitation Program as the first step for all healthy term infants who do not require resuscitation.⁶ The Neonatal Resuscitation Program guidelines state that "term infants who have good muscle tone and cry or breathe spontaneously should not be separated from the mother, but should be dried and placed in skin-to-skin contact with the mother, with both of them covered with dry linen." (6, p. S910).

Other profound and undisputed effects of SSC are improvement in initiation, duration, and exclusivity of breastfeeding and enhanced milk production.⁷ Because of these lactation effects, provision of SSC immediately after birth until the first feeding at the breast is finished has been identified as the essential first step for meeting Healthy People 2020 breastfeeding goals,⁸ for meeting the Association of Women's Health, Obstetric and Neonatal Nurses' perinatal core measures for excellent care,⁹ and for meeting the new Joint Commission mandate that all healthy term infants born in hospitals delivering 1100 or more infants/year are exclusively breast milk fed by discharge.^{10,11} Continuing SSC throughout postpartum may yield exclusive breast milk feedings at discharge.^{1,12} Despite these

recommendations and the Joint Commission mandate, the practice of SSC at birth is not widespread.^{13–15} Reasons for slow adoption of SSC at birth are lack of knowledge/education about skin-to-skin at birth,^{15,16} no standardized method or uniform practice for skin-to-skin contact,^{16,17} occasional unfamiliarity with how to assess the newborn, unfamiliarity about how to position the infant for safety, discomfort with being responsible for newborn wellness – especially the infant's physiologic condition, and how to minimize risk of infant complications that can occur when infants go to breast.¹⁸ The purposes of the manuscript are to share with maternity nursing staff how to conduct an easy newborn assessment that helps the nurse identify immediate newborn physiologic condition and to share nursing interventions designed to minimize the risk of the newly-emerging complication called Sudden Unexpected Postnatal Collapse (SUPC).¹⁹ Assessment and documentation tools are presented that can facilitate comfort, comprehensiveness, and competence in assessing infants and ensuring their safety during SSC.

The Skin-to-Skin Contact Newborn Assessment

The Neonatal Resuscitation Program (NRP)²⁰ recommends health professionals observe infant breathing, activity, color and tone in each newborn infant. The infant's assessment should be ongoing and continue throughout the recovery period in the labor/delivery unit. Because monitoring of the infant's head, neck, nose, and mouth is critical for prevention of SUPC and should continue after resuscitation has been completed, a simplified and rapid newborn assessment tool that incorporates safe position requirements was developed. The assessment tool is called the Respiratory, Activity, Perfusion, and Position tool (RAPP)²¹ and is explained below.

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R Stands for Respiratory Effort

Is the infant breathing easily? Easy breathing means the respiratory rate is normal (40–60 breaths per minute), respirations are regular (not irregular, no apnea), and that there are no signs of increased work of breathing (no grunting, nasal flaring, nor retractions). Tachypnea, irregular breathing, grunting, nasal flaring, and/or retractions indicate that breathing is not easy and that there is abnormally increased work of breathing. If the answer to the question posed above is “Yes, the infant is breathing easily,” continue to the next assessment parameter in the RAPP tool. If the answer is “No, the infant is not breathing easily,” proceed with current NRP procedure as taught in your NRP certification training. Documentation should be either “easy breathing” or “increased work of breathing.”

A Stands for Activity

Activity refers to what the infant is doing and in which state (“asleep,” “quiet alert,” “active alert,” “crying,” the infant is.²² Healthy infants generally move about, alternating movements with rest periods in which movements cease for up to ten minutes.²³ If the infant has his eyes closed, the infant is ‘asleep’ or resting and resting lasts a short time (about five to ten minutes) each time it occurs in the first two hours post-birth.²⁴ When an infant is ‘quietly alert’, the ‘quiet’ means no gross body movements are occurring and ‘alert’ means eyes are open and appear attentive.²⁵ When the infant is in the ‘active alert’ state, his extremities, head or trunk are moving and his eyes are attending to the environment. Infant movements may be slow and dull or quick and sharp. The highest state is ‘crying’ and can vary from a whimper to a lusty cry. Breastfeeding is an infant behavior accompanying an awake state. If a ‘quiet’ infant does not respond to tactile stimulation by movements, arousal, or change in physiology, the infant is “non-responsive,” which is an ominous sign. If an unresponsive infant is found, the nurse should initiate resuscitation measures immediately. Documentation options in the Activity category are “asleep,” “quiet alert,” “active alert,” “crying,” “breast-feeding,” or “non-responsive.”

The First P Stands for Perfusion

Perfusion represents oxygenation which can be described using the color of the skin. So, perfusion in the RAPP tool refers to the infant’s skin color. The ideal color is pink, but many infants appear mottled (spotty pink and pale segments of the skin), indicating that the infant may be cold due to peripheral vasoconstriction or the infant may have decreased oxygen saturation due to delayed transition to extra-uterine life or underlying illness, i.e., congenital heart defect. If the infant is in SSC, check that the infant’s chest is in full contact with the mother’s chest, because any separation of the infant’s skin from the mother’s skin will prevent maternal conductance of heat to the infant²⁶ and the infant’s peripheral temperature will drop.²⁷ If the infant’s skin appears pale, gray, dusky, or blue (cyanotic) – all of which suggest impaired circulation or perfusion – and if color does not improve rapidly, the infant should be removed from SSC, and taken to a radiant warmer for a comprehensive evaluation. Documentation options for the Perfusion category are “pink,” “acrocyanosis,” “pale,” “dusky,” “gray,” or “cyanotic/blue.”

P Stands for Position

The second “p” stands for ‘position.’ Position of the head (should be upright and turned to one side), neck (should be erect in midline, not bent), nares and mouth (both should be uncovered and visible) and extremities (extremities should be well flexed when infant is lying prone on his/her abdomen). If any extremity is not flexed, extend and release it quickly, watching for spontaneous recoil.

Spontaneous recoil is a good sign and means that infant tone is satisfactory. If spontaneous recoil is not seen, the limb is described as being “limp” or “flaccid”; flaccidity of a limb or whole body is an ominous sign suggesting poor oxygenation of the brain.²⁸ Position also refers to the mother’s position as she holds her infant to her breast or in SSC. The mother should be semi-upright and supported by three to four pillows. The upright position provides gravitational assistance for infant respirations.^{29,30} Documentation options for the Position category are “head upright and turned to one side,” “neck erect in midline,” “nares and mouth visible,” “well flexed,” and “limp, flaccid.”

Whenever you observe the infant, do the “RAPP” assessment. The following “RAPP” flow sheet can be added to your electronic medical record to serve as a reminder and facilitate swift documentation of “RAPP” results (Figure 1). Documenting your observations will reassure you when the infant is well and make you acutely aware when the infant’s condition is less than optimal.

Sudden Unexpected Postnatal Collapse (SUPC)

Sudden Unexpected Postnatal Collapse is a condition in which a previously vigorous, spontaneously breathing infant who had a five-minute Apgar of 8 or more, unexpectedly becomes apneic, often necessitating full resuscitation.¹⁹ Sudden collapse has also been defined as acute cyanosis/pallor and unconsciousness, requiring bagging, intubation and/or cardiac compressions³¹ and has been found to commonly occur with breastfeeding of the newborn.³² Actual incidence of SUPC in presumably healthy infants varies between 2.6/100,000³¹ and 38/100,000.¹⁹ Herlenius and Kuhn³³ reported one-third of SUPCs occur during the first two hours post-birth, another one-third between two and twenty-four hours post-birth, and the last third between one and seven days post-birth. An earlier study reported that 73% of SUPCs occurred in the first two hours post-birth.³⁴

Because many SUPCs occur within the first few hours of birth, labor and delivery nurses, as well as newborn/postpartum/couplet care nurses and families, need to take steps to minimize the risk of SUPC.^{19,31} During the first two hours post-birth, continuous surveillance is recommended.^{31,32,35–38} Infants who have suffered from SUPC have been found prone at the mother’s breast, prone on the mother’s chest or abdomen, swaddled and supine in the mother’s arms, swaddled and being held supine by the father or grandmother, lying beside a parent on the parent’s bed, prone or supine or on their sides in their own cots, and in various other places and positions.^{31,34,39} Infants in SSC are less likely to have problems than infants placed prone elsewhere.^{40–42} Some infants who have experienced SUPC have had no negative sequelae, but others have had severe adverse neurologic outcomes or death as a result.^{31,33} Assessment of risk factors and implementation of strategies to minimize risk of SUPC are a nurse’s responsibility.^{36,43,44} Prevention of SUPC may be possible because SUPC occurs when “multiple factors act simultaneously to result in these unexpected events. The baby must have an intrinsic vulnerability, possibly blunting of the arousal response...but in the early neonatal period (the infant) also may have increased vulnerability due to post-delivery stress, presence of narcotics or magnesium sulfate given to the mother... and thirdly, there must be an additional exogenous stressor (e.g. prone position, nose in breast, covers over face with carbon dioxide retention, etc.” (36, p. 22). Thus, minimization of risk is the goal.

Multiple factors have been identified as potential risks for SUPC. The factors are presented in Table 1. Staff should be educated to identify couplets who present high risk for SUPC, such as mothers who are sedated by narcotic or magnesium sulfate, or are very fatigued, are primiparous, obese, and intermittently observed, and infants who have required some resuscitation,³⁶ because high-risk patients require closer monitoring. Health personnel need to remember that

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