

BASIC CARE OF NEONATES IN THE GRACE CENTRE FOR NEWBORN INTENSIVE CARE - CHW

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- This document is a guide for all staff in Grace Centre for Newborn Intensive Care (GCNIC) on providing basic cares for neonates in the NICU.
- This document links to the other more detailed practice guidelines for specific components of newborn care.
- This document should be read in conjunction with the GCNIC Handbook of Newborn Care.
- Key performance indicators include:
 - A newborn screening test is attended to on all infants
 - Measurement of blood sugar levels occurs with correct technique for sampling
 - Heel lancing is attended with sucrose or breastfeeding two minutes prior to procedure
 - Blood specimens are not haemolysed
 - Weights are documented in the electronic medical record and NICUS database
 - Immunisations are given at due times

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st March 2023	Review Period: 3 years
Team Leader:	Clinical Nurse Consultant	Area/Dept: GCNIC - CHW

CHANGE SUMMARY

The summary include:

- Update of Comfort Strategies section and referral to Tresillian Responsive settling publication
- Intra-gastric tube placement:
 - Referral to the Feeding the High-Risk Neonate practice guideline
- Eye examination: Revision of instructions and guide for the eye examinations process in GCNIC to reflect current practice
- Blood Glucose estimates section:
 - Referral to Blood Glucose Management in the GCNC – CHW Practice Guideline
- Newborn Screening programs section:
 - Referral to Newborn Bloodspot Screening Policy Directive
 - Referral to the GCNIC Newborn Hearing Screening in Grace Centre for Newborn Intensive Care Procedure
- Updated information provided regarding Hepatitis B vaccination schedule
- Update of Skin Care Section to reflect current best evidence
- **31/03/23:** Minor review – Updated Monitoring and Vital Signs section

READ ACKNOWLEDGEMENT

- To be read and acknowledged by all nursing and medical staff working in the Grace Centre for Newborn Intensive Care.
- Updated copy to be included to unit-based orientation packages

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General Care of the Newborn Infant

The [Developmentally Supportive Care for Newborn Infants Practice Guideline](#) is the partner document for the provision of basic care routines.

Principles of care

- The infant's developmental needs and health requirements take precedent over routines.
- Infant care is provided in the infant's bedspace.
- Staff allocated to care for an infant or group of infants prioritise care based on individual needs.
- All care is undertaken with infant safety considered a priority.

Direct caregiving

- When providing care to the infant, ensure that you maintain eye contact and speak to the infant during the interaction.
- Parents are seen as partners in providing care to their infant; support them during their interventions and interactions.

Neonatal Intensive Care Unit Nurse Practitioner Role

- GCNIC has nurse practitioners who work across the unit
- The Neonatal Nurse Practitioner (NNP) role focuses on improving patient flow, reducing length of stay, and facilitating consistency of care.
- The GCNIC NNP role provides coordinated case management of infants from the time of admission through to discharge and beyond, into the community setting.
- The NNP is an expert neonatal nurse who is able to support registered nurses in care provision, education, and patient assessment.
- The NNP can be used as a resource for basic and developmental care, parental education, and nursing support.

Standard (Universal) Precautions

- All visitors, including health professionals entering the NICU are to wash their hands prior to proceeding to the patient's environment.
- Bags and coats are to be left external to the patient care areas; lockers are provided for families.
- Hand washing instructions are to include rolling up sleeves, removing watches and bracelets, and removing elaborate rings.
- Hands must be washed before and after attending patients and/or their equipment.

- Gloves must be worn when handling all body fluids. This includes nappy changes, performing a heel stick for blood collection, suctioning of the pharynx or trachea, emptying stoma appliances, handling expressed breast milk, and aspirating gastric tubes.

Consistency of care

- All care is provided in a consistent manner to ensure the learning and development needs of each infant are supported.
- A documented plan of care for each infant and family ensures that there is a consistent approach to planning daily and longer routines.
- Information provided to families should be consistent with previous information given.
- Guidelines and manuals should be followed to enable a consistent approach to be delivered.

Comfort Strategies

Positioning

Because of an infant's specific medical and/or developmental needs whilst a patient within Grace Centre for Newborn Intensive Care, some caregiving interventions may not comply with the published SIDS guidelines. These are determined in consultation with the nurse in charge. However, when the infant has recovered and is nearing discharge, the safe sleeping practices should be introduced, demonstrated, and explained to the parents.

These guidelines are based on the recommendations of the National SIDS Council of Australia¹, which are consistent with those laid down by the National Health and Medical Research Council of Australia and supported by NSW Health¹.

Some sleeping positions are not safe. They can increase the risk of SIDS or cause serious sleeping accidents. Infants with medical conditions who are cared for in hospital may require specific positioning practices.

General Recommendations for safe positioning

- Place infants on their backs to sleep²
- Ensure the infant's face is uncovered during sleep.
- Keep infants in a smoke free environment
- Place infant's feet at the bottom of the cot
- Tuck in bedclothes securely so bedding is not loose
- Ensure thick quilts, doonas, duvets, pillows and cot bumpers are not used in the cot.
- Soft toys are not to be placed in the cot or bassinette.

Specific guidelines

- All staff in GCNIC should be aware of the SIDS recommendations and the evidence on which the guidelines are based². This information is available in a resource folder in GCNIC and in the SIDS parent factsheet resource.
- Nursing staff should consider implementing SIDS guidelines following discussion with the Nurse Unit Manager, Neonatologist and with the infant's parents when:
 - The infant has recovered from intensive care treatment and no longer requires specific supportive interventions such as nesting and/or the use of a Zaky hand.
 - The infant is greater than thirty-six weeks post-conceptual age and is bedded in a cribette with potential discharge home approaching.
 - The infant's individualised needs are considered within the context of this process.
- The infant's care will be planned, guided by the SIDS guidelines, and become a part of the discharge planning/parent education process.
- The infant's face should be protected from potential airway obstruction by:
 - Positioning infants on their back, with their feet at the bottom of the cribette unless there is a documented requirement to be positioned differently.
 - Tucking bedding in at the sides of the bassinette.
 - Positioning cribettes flat on the bed frame to prevent infants slipping down underneath the bedding.
- Should there be a requirement to elevate the head end of the cribette, document the fact in the infant's care plan providing an accurate description of the infant's current problem and rationale for such requirement and name of person who gave the instruction.
- Soft toys should be placed on the shelf near the infant's bed space.
- When swaddling infants, ensure their hands are positioned near their face so that they are able to suck on their fingers and self-soothe.
- At least one parent should be informed of the SIDS recommendations. A SIDS Information brochure is included in the admission pack, document in the electronic medical record when this has been discussed with the parent/s.

Caveat to positioning guidelines

- Infants who are premature, sick, or who require supportive strategies for their developmental needs (these infants are usually fully monitored, with cardiorespiratory monitoring).
- If the infant is nursed on their side for medical or health reasons, make sure that his or her lower arm is well forward to stop rolling onto tummy. Ensure where possible sides are alternated including time on their back to prevent flattening of their head and torticollis.
- There is no indication for home apnoea monitoring for the general population as a preventive strategy for SIDS³.

- If a home apnoea monitor is requested for discharge, adequate counselling, training, and availability of support services are required. This is arranged in consultation with the neonatologist.

Relevant NSW Health Clinical Practice Guidelines:

- [Babies - Safe Sleeping Practices: NSW Health Policy Directive](#)
- [Apnoea Monitors](#)

Settling

There are a number of settling strategies used to settle infants. No matter which strategy you use, each is designed to teach the infant to self-settle and learn to get themselves to sleep. Discuss with and encourage parents to employ settling techniques to support their engagement in their child's care.

Please refer to the [Tresillian Responsive Settling 0-12 Months⁴](#) factsheet for further information on settling techniques

Patient Safety: Swaddling^{5 & 6}

Swaddling can be an effective strategy for settling infants and assists in the soothing of pain. However, if done too tightly or incorrectly with the legs in extension and adduction it can place infants at risk of developmental dysplasia of the hips (DDH).

DDH is the abnormal development of the hip joint where the top of the thighbone (femur) is not held firmly in the socket of the hip. DDH is an important cause of disability in childhood. When swaddling an infant, it is important to ensure that their legs are free to bend and flex so that they are not at an increased risk of DDH (i.e. "Hip-healthy/safe swaddling").



Figure 1: Incorrect wrapping technique

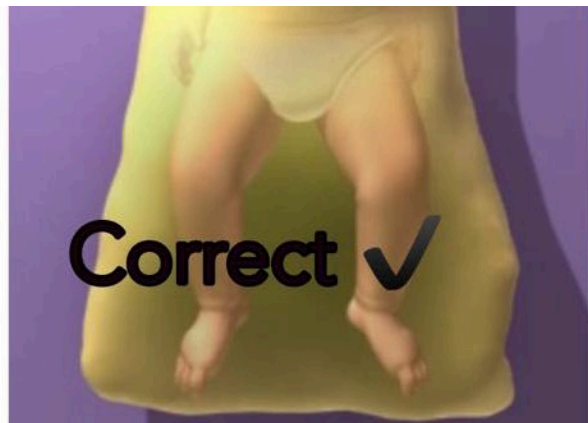


Figure 2: correct wrapping allowing flexion

As pictured above, the legs should be wrapped loose enough so that a neutral position that allows the infant's legs to be free to bend and flex can be encouraged.

Skin to skin care (Kangaroo mother care)

Skin to skin care is used to facilitate bonding between parent and infant. Studies in preterm infants have shown skin to skin care promotes more organised sleep wake cycles, improves duration of breastfeeding, and increases weight gain, and decreases energy expenditure⁷. It can be used for stable ventilated infants⁸.

Please refer to the [Skin-to-skin care for neonates Practice Guideline](#) for further information.

Ward Grandparents

The Ward Grandparents (Granny) Scheme is used for infants whose parents cannot visit regularly. The scheme is administered by the Social Work Department.

Specific Instructions

- Ward Grandparents are allocated to infants within the nursery in consultation with the parents and social worker.
- Parents receive a pamphlet explaining the ward grandparent's role after discussion with the social worker. With the parents' consent, a Ward Grandparent is allocated to the infant by the social worker.
- Both the parents, the NUM and the nurse allocated to care for the infant need to be introduced to the Ward Grandparent on her/his initial visit.
- Nursing staff are to instruct Ward Grandparents on the hospital hand-washing policy.
- Information about the baby's medical condition and social situation should only be discussed with the Ward Grandparent at the discretion of the medical consultant, nursing staff and social worker. Confidentiality is to be respected at all times.
- As each infant has individual needs the Ward Grandparent, nursing staff, social worker, and parents should negotiate an appropriate plan of care and attendance. The following items need to be considered
 - Visiting times
 - Taking the baby for a walk outside the ward
 - Feeding the baby
 - Bathing the baby
- Should the nursing staff be concerned about the appropriateness of a ward grandparent they should consult with the clinical nurse coordinator and the social worker.
- Documentation of the visits and activities undertaken by the Ward Grandparent are made in the electronic medical record.

Family Support Volunteer Program

The Family Support Volunteer (FSV) Program aims to help support parents by providing infants with support and comfort when parents need to leave the hospital for periods of time for other obligations.

FSVs can provide support with:

- Comforting babies (e.g. cuddling, supportive holding, distraction)
- Engaging in age appropriate developmental play
- Bed changes and collecting fresh linen
- The distraction or management of siblings
- Changing nappies or soiled clothes (parent approval required)
- Comforting babies during procedures in GCNIC (under nursing supervision)

Specific Instructions

- Factsheets regarding the FSV Program can be provided to parents to provide them with information about the service.
- If a family provides verbal consent to participate in the FSV Program, a purple FSV sticker will be placed at the infants' bedside. If the family request not to be in the FSV Program, a red dot will be placed instead. Consent can be revoked by the parents at any time.
- If you have any concerns or queries about the FSV Program, please contact the GCNIC Social Worker or the GCNIC Clinical Nurse Consultant.

Painful Procedures

Painful procedures are sometimes unavoidable in the NICU. It remains the philosophy to use the least painful procedure and to ensure that sucrose or breastfeeding is used at least 2 minutes prior to all painful procedures^{9&10}.

Blood collection and venepuncture

- Please refer to the [Blood Collection from Neonates in GCNIC Practice Guideline](#) for additional information on blood collection in neonates.

Intragastric tube placement

Please refer to the [Feeding The High-Risk Neonate Practice Guideline](#) for further information on the insertion and use of intra-gastric tubes.

Bathing

- Bathing routines are an important part of parent participation in care giving. Coordinate bath times with parent availability so that family-centred care can be promoted and education surrounding bathing can be provided¹¹.
- With regular nappy care, infants don't require bathing more than 2–3 days/week. More frequent bathing may dry out their skin¹².
- For preterm infants less than 32 weeks of gestation, gently clean skin surfaces using warm water only during the first week of life. Use soft materials such as cotton balls or cotton cloth but avoid rubbing the skin.
- Assess for a stable temperature within the normal range (36.5 – 37.2°C) for a minimum of 2-4 hours prior to bathing the infant.
- Place the tub in an environment free from drafts.
- Use warm water, not hot (test with your elbow) to a depth of around 10cm in the tub.
- Use a baby bath cleanser with the least irritating formula and avoid antimicrobial soaps where possible (excluding in the case that a pre-operative wash with triclosan is required for babies with MROs). If the parents have a particular product that they have brought in and prefer to use, this should also be facilitated.
- Bathing before sleep has been reported to enhance the quality of sleep¹³.
- Immerse the stable infant fully, except for their head in an appropriately sized tub.
- Infants with a stoma or other surgical wounds (abdominal, cardiac) may be bathed after the wound has healed.
- Infants with central venous catheters (i.e. PICCs, Broviacs, PowerLines) are to only have a modified bed bath where a small volume of water.
- Avoid rubbing the skin during bathing or drying.

Swaddled Bathing

Use the swaddled immersion-bathing technique for sensitive, but stable infants needing assistance with motor system reactivity^{11, 14}. Utilise the following instructions when undertaking swaddled baths:

1. Commence preparing for bath when baby is settled
2. Fill the bath with warm water, place a clean towel in the cot ready for the end of the bath
3. Disconnect the leads from the monitor
4. Remove all the baby's clothes including the nappy
5. Wrap the baby in the swaddle/wrap placing their hands near their face, softly bending their arms and legs

6. Clean the baby's face with a wash cloth or gauze and no soap. Start with gently wiping the eyes by gently wiping from the nose to the ears. Using a new piece of gauze for each eye. Then gently clean around the whole face.
7. Place the baby in the bath, with their head resting on your wrist with the water just below their shoulders.
8. Gently unwrap one of the baby's arms and wash the exposed are with a wet soapy washer.
9. Rinse the arm and re-wrap.
10. Repeat steps 7 and 8 for all the arms and legs, the stomach and genitals.
11. Rock the infant forward supporting under the neck and wash through the cloth
12. End the bath with gently washing the hair, angling water away from the eyes
13. Slowly unwrap the baby in the bath, ask your assistant to place the clean dry towel on their chest
14. Lift the baby from the bath leaving the wet swaddle behind and place in the assistants' chest with the dry towel
15. Re-wrap the baby and dry gently, including the hair. Dress with a hat and clean nappy.
16. Re-attach to monitoring
17. Prepare for feed or skin to skin

Caveat

The baby should not be in the water for any more than 8 minutes



Step 5



Steps 8-10



Step 15

Figures six, seven and eight demonstrate swaddled bathing technique.

Care Routines

Umbilical cord care¹⁵

- Perform hand hygiene before handling the umbilical cord.
- Fold down the top of the nappy to help the umbilical cord to stay dry and clean and prevent contamination with urine/stool. This will assist in preventing infection.¹⁸
- If the umbilical cord stump becomes soiled with urine or stool, cleanse the area with water, dry thoroughly with clean gauze and then leave uncovered so that it can dry thoroughly.
- The cord clamp maybe removed at 48-72 hours provided the cord is dry.
- The cord usually dries out, hardens and turns black in a process known as dry gangrene. This process is helped by exposure to air.
- The cord usually separates between 7 – 14 days.

Mouth care

- Infants have their mouths cleaned with sterile water (WFI) or breast milk.
- Apply paraffin to the lips using cotton tips if dry.
- Check the infant's mouth for signs of oral candida (white patches on the tongue). If present, inform the doctor/NNP so that antifungal medication can be commenced (please note: if antifungals such as Nystatin are prescribed orally, they are NOT to be placed down gastric tubes and must be given orally so as to coat the inside of the infant's mouth). Also, consider the need for maternal treatment at the areola if the infant is breastfeeding.

Eye care

- Eyes that are clear with no exudate do not need to be routinely cleaned.
- If eyes are 'sticky' or have discharge, clean with normal saline soaked on sterile cotton wool balls. Wipe from the inner canthus to outer canthus and discard after each pass.
- If exudate persists, notify the doctor/NNP and take an eye swab. It should also be documented in the assessment in the electronic medical record.

Eye Examinations

- All neonates born before 32 weeks gestation (and/or have a birth weight under 1500g) require an eye examination performed by the ophthalmology team.
- The examination should be first performed at four weeks of age (unless the infant is under 28 weeks gestation, then it should be first performed at 32 weeks corrected gestational age (CGA). Further eye reviews may be performed based on the recommendations of the ophthalmologist.
- Eye reviews usually take place on Friday mornings; however, examinations may be performed at other times based on the ophthalmology team's request.

- The eye examination list can be found in a folder in the doctor's office. It is the registrar's responsibility to place the MRN sticker labels of all the patients requiring eye reviews for the week in the eye examination list and to write up a consultation sheet for new patients.
- The eye examination list must be available by the end of the workday on Wednesdays. On Thursdays, the eye list is faxed to the Ophthalmology team who will contact the GCNIC team to advise what time the eye drops should be administered prior to the eye review taking place.

Nursing Staff Responsibilities

It is the responsibility of nursing staff to:

- Check the examination list
- Check which patients will be having an eye review
- Get the eye drops charted by the neonatal medical officers or Nurse Practitioners on the patients' medication chart
- Inform the patient's family that the eye review will take place and advise them of the eye examination procedure
- Administer the eye drops used in preparation for eye examinations at the prescribed times
- Provide support to the infant prior to, during, and following the procedure

Administration of Eye Drops

- The local anaesthetic eye drops (amethocaine 0.5%) and the cycloplegic and mydriatic eye drops (cyclomydril which contains cyclopentolate and phenylephrine) are to be administered by nursing staff as per the instructions featured on the medication chart.
- Apply pressure to the nasolacrimal sac during and for 2-3 minutes after instillation of eye drop to minimise systemic absorption.
- Cycloplegic eye drops are used to temporarily paralyse the ciliary muscle of the eye, causing the pupil to dilate. Avoid exposure to bright direct light after use.
- Consider withholding feeds for 4 hours post instillation of eye drops due to increased risk of feed intolerance

During the Eye Examination

The nursing staff support the infant during the procedure by:

- Administering oral sucrose two to three minutes prior to the eye examination for pain and discomfort.
- Using the four handed care method to support the neonate with the procedure (that is, two nurses are required for the procedure). Consider containment, wrapping and the use of a dummy.
- Assisting the ophthalmologist during the procedure as required

Measurements and Testing

Weighing infants

Infants in GCNIC are weighed to determine their growth trends, to ensure parental nutrition is ordered according to the current weight and to ensure those infants with the potential for heart failure receive appropriate fluid volumes. Pharmacological calculations and blood replacement volumes can be accurately determined with the current weight available.

All infant should be weighed every Monday, Wednesday and Friday, provided their weight gain has been satisfactory, however, infants may need to be frequently weighed as per the neonatologist or other teams (e.g. cardiology, renal, surgical, etc.). The weights are entered into the electronic medical record and the neonatal database. The normal weight gain expected for a neonate is 25-30 grams per day or 200 grams per week on average. It is normal for a neonate to lose 10-20% of their birth weight in the first two weeks of life.

Patient and Carer Safety

- Ventilated infants are weighed with cardiorespiratory and saturation monitoring attached
- Two nurses must weigh all ventilated infants to reduce the risk of accidental extubation. Ensure the ETT is securely taped prior to moving to the scales.
- Ensure a rebreathing bag is connected and available during the procedure.
- If the infant's condition alters during the procedure, return the infant to the bed and reassess the infant's condition.

Technique

- Zero the scales with a warm wrap on the scales.
- Care must be taken to maintain the infant's body temperature by wrapping the infant in a warmed wrap for the procedure.
- The deductions for the monitoring and tubes (found on the deduction chart) are made prior to plotting the infant's weight.
- All infants have their weight charted in the electronic medical record in the growth chart. Record the type of scale used.
- The weight is plotted on the World Health Organization (WHO) Growth Chart or for preterm infants, the Fenton Preterm Growth Chart which are located in the electronic medical record and the neonatal database to determine the growth centile at birth.

Developmental and Family Considerations

- Time the procedure so the family may be present and involved.
- Where possible, coordinate the infant's bath and weigh at the same time.
- Support the infant during the procedure by using an appropriate 'nesting' system prepared on the scales.

- Facilitate the infant's comfort and stability by maintaining limb flexion during handling. Consider performing a side-lying weight to assist in maintaining patient stability throughout the procedure

Caveat to Guidelines

- Infants that are muscle-relaxed, unstable with handling, those with gastric silos and infants in orthopaedic traction are not to be weighed unless specifically requested by consultant neonatologist.
- Consultants may request more frequent weights depending on the infant's clinical condition.
- The Fenton (Modified Babson) chart (CS9) is used to plot the growth pattern for preterm infants and the standard WHO hospital weight percentile charts for term infants. These charts can be located in the electronic medical record. Additional condition-specific growth charts are available for Down Syndrome, Prader-Willi Syndrome, Turner Syndrome and Achondroplasia.
- If possible, all weighs should be performed at approximately the same time each day.
- Long-term medical aids such as Pavlik Harness, splints, central lines (e.g. PICC and Broviac lines), tracheostomy and gastrostomy tubes are not deducted from the total weight.

Head circumference

- Head circumference is measured weekly (Wednesdays), recorded in electronic medical record and plotted on the *Longitudinal Growth Chart* in the electronic medical record, and the neonatal database.
- Normal neonatal head circumference growth is 0.5cm per week. The average range for a neonatal head circumference at birth is 33-35.5cm for a term neonate.

Length

- The infant's length is measured from the crown of the head to the heel using a straight device.
- Lengths are performed on admission and every Wednesday throughout their admission
- The length is documented in the electronic medical record on discharge and for infants prior to cardiac surgery since their medications and fluids are calculated based on their Body Surface Area (BSA).
- Normal neonatal length should increase by 2-4cm in the first month of life. The average range for neonatal length at birth is 48-53cm for a term neonate.

Urine measurement and analysis

Urine measurement is used as an assessment of the infant's hydration status and requires strict observation and recordings. Normal urine output (1-4ml/kg/hr) may be diminished in infants with severe disease such as cardiac failure, dehydration, respiratory distress, and asphyxia. Renal hypo-perfusion may occur.

- All infants have their urine output measured until renal function is established as normal. Other infants such as post-surgery, cardiac infants, infants receiving intravenous therapy or TPN, infants with renal abnormalities, or infants nursed under phototherapy also require urine measurement.
- Urinalysis should be attended to daily for every infant and is recorded in the electronic medical record. The urinalysis may be attended every 8 hours for some conditions or if requested by the neonatologist.
- If urine output is outside normal parameter, notify medical officer and nurse-in-charge of the shift.
- Urine output may be measured using pre-weighed nappies with the weight of the dry nappy deducted from the weight of the wet nappy. One gram of increased weight equals one millilitre (ml) of fluid.
- On some occasions, a urine bag may be necessary. Clean the genital area and apply a urine bag. A short feeding tube may be inserted into the urine bag for aspiration of the urine as this avoids unnecessary and frequent removal of the bag.
- Drugs such as narcotic infusions, epidural analgesia, muscle relaxants, or a neurogenic bladder can cause urinary retention in an infant. If you suspect retention, inform the medical officer and the nurse-in-charge as further interventions may be required (e.g. bladder scan, the expression of the bladder, urinary catheterisation).
- Falsely low estimate of urine volume may occur because of evaporation of urine if a wet nappy is left too long before it is weighed. Care should be taken to weigh the wet nappy as soon as possible and document the volume in the electronic medical record.

Stools

- Observe each nappy for the colour and consistency of the stool.
- If the stool appears loose and watery, consider testing for reducing substances (or viruses, particularly if stools are foul-smelling) if other causes (such as narcotic weaning) have been excluded.
- Document the results in the electronic medical record.
- Infants with a stoma may have increased fluid losses. Document the volume, consistency, and odour. If the stools are loose and watery, document in the electronic medical record, and inform the medical officer and the nurse-in-charge who will determine if additional interventions (e.g. reducing substances, fluid replacements) are required.

Blood glucose estimates

Glucose is essential for normal brain function both as a major metabolic fuel and during rapid brain growth of the infant¹⁷. Infants at risk of abnormal blood glucose levels include those who are preterm and/or small for gestational age (SGA), large for gestational age (LGA), infants born to diabetic mothers, and infants who are stressed from asphyxia, sepsis, heart failure or cold^{16 & 17}.

Please refer to the [Blood Glucose Management in the GCNC – CHW Practice Guideline](#) for further information.

Newborn Screening Programs

Newborn Bloodspot Screening Tests¹⁸

Newborn Screening is carried out on all newborn babies to ensure the early detection and treatment of metabolic disorders. Newborn bloodspot screening detects disorders such as phenylketonuria, primary congenital hypothyroidism, cystic fibrosis, and galactosaemia, as well as any other disorders recommended by the NSW NBS Advisory Committee.

Early treatment has modified the outcome for affected babies, preventing the development of serious mental disability and preventing or ameliorating many other effects of the various disorders. This also allows for counselling with parents and family.

Patient Safety

- According to the NSW Health Department: written consent must be given by the parent/guardian prior to the sample collection. Parents are to sign the back of the Newborn Screening Test Card.
- The pamphlet “Tests to Protect Your Baby” must be given to all parents prior to the test. The information in this pamphlet must be discussed with the parent/guardian. Distribution of the pamphlets without discussion is not permissible.
- Documentation within the electronic medical record that the pamphlet was given to the parent/guardian, discussed with them and their consent was given for test.
- If the parent/guardian is unable to be contacted after reasonable effort, the NBS should not to be collected until written consent is obtained.
- If the parents refuse to consent to have the NBS, a test card marked “refused” must be filled out and “refused” entered as a note into electronic medical record. This is to complete the records and for legal purposes

Sampling technique

- The optimal time for collection is between 48 and 72 hours of age however, sample can be accepted if done after 24 hours of age
- If infants require surgery prior to 48 hours of age ensure the NBST is collected prior to surgery
 1. Complete all information on the card prior to collecting the blood

2. Administer sucrose prior to the heel stick procedure for pain
3. Observe standard precautions by wearing gloves during sampling
4. Use only a neonatal lancet with a small needle for performing heel stick
5. Where possible, place the baby's leg lower than the rest of the body
6. Clean the area with an alcohol swab or sterile water
7. Dry the area with sterile cotton wool
8. Puncture the heel with a sterile lancet on the inner or outer border of the heel (see previous heel stick picture)
9. Allow time for the puncture to ooze and wipe away the first drop of blood with a sterile cotton wool swab as it may be contaminated with tissue fluid or debris (sloughing skin)
10. Gently massage above the puncture site to encourage the blood to flow and allow the free flowing blood to drop onto the NBS filter paper card
11. Drop the blood onto one side of the NBS card only
12. Completely fill each circle. Blood must soak through the card to the other side
13. Apply gentle pressure to the heel until the bleeding stops
14. Hold newly collected samples horizontal for about 20 seconds so the blood remains even
15. Do not layer successive drops of blood onto the card
16. Do not squeeze the heel during the blood collection as this can dilute the specimen with tissue fluid (plasma) and increase the probability of haemolysis
17. Avoid touching or smearing the blood spots
18. Place the card in the drying rack horizontally

Samples for NBS may be taken from an arterial line after ensuring there is no heparin in the syringe used for the sample.

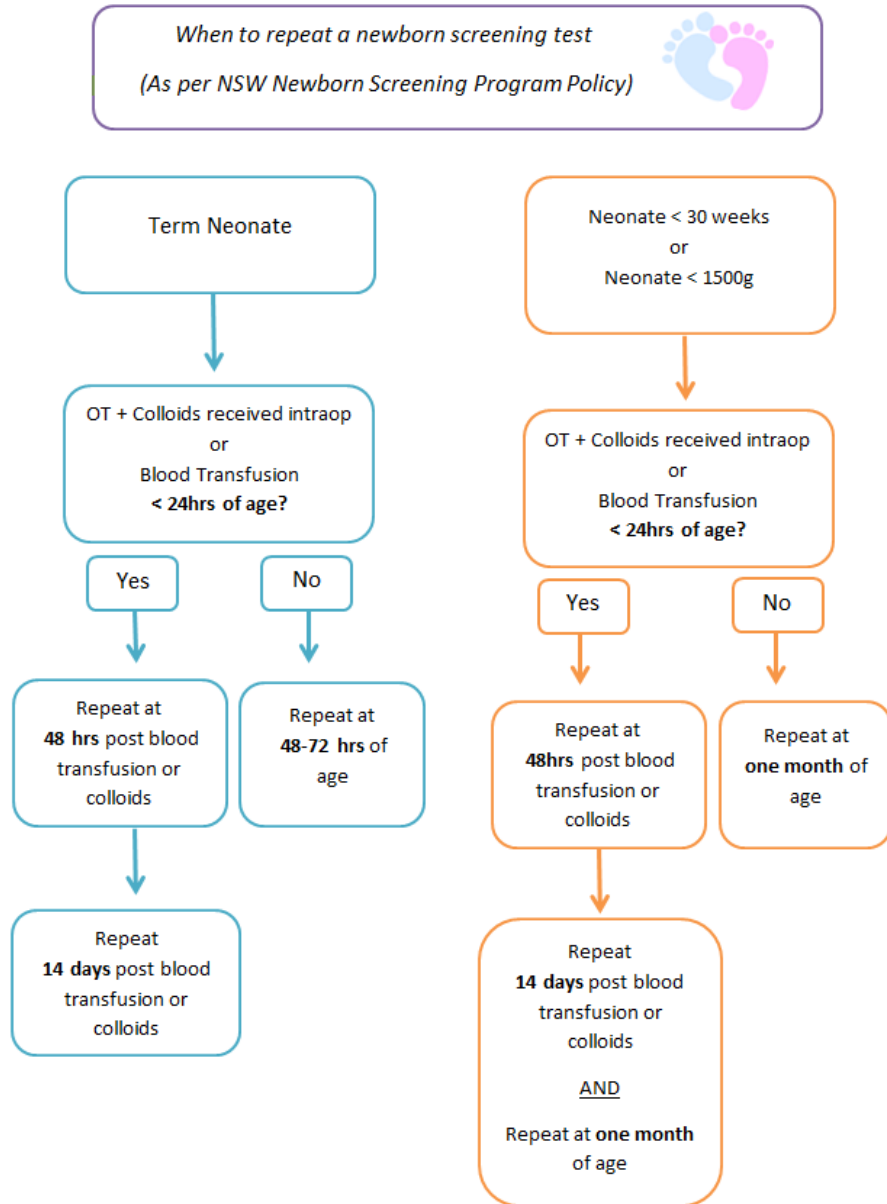
Documentation of newborn screening

- Documentation of the NBS must be made in the electronic medical record, the neonatal database, and the blue book.
- Ensure the details written on the cards are complete and correct prior to collecting sample.
- Do not leave the card near milk formula, antiseptic solutions, lotions, water, urine etc.
- Infants who have had a NBS prior to admission need to have the place (hospital) where the NBS was performed documented in the electronic medical record and Grace NBS record book.

- If there are clinical indications of galactosaemia and the infant is on TPN or soy based milk, please notify the laboratory so that the need for additional tests can be evaluated.

Caveat to guidelines

- In the event of a neonatal death, a card is completed and marked "neonatal death". A sample could provide useful post mortem information.
- If the infant is to receive a blood transfusion or is going to theatre and may receive a blood transfusion, collect a NBS sample before the transfusion is administered. If a sample is not collected, wait 48 hours after the transfusion to collect the sample. Ensure the card is marked "Transfusion Given" with the date of transfusion.
- A repeat NBS test should be done at 1 month of age for preterm infants.
- Infants who were born overseas or babies whose families reside overseas and who have not had a newborn screening test in their country of birth may be offered the newborn screening test, and the results will be interpreted according to the age of the infant.
- Milk feeding is not generally necessary before a newborn screening sample is collected but accumulation of metabolites and the interpretation of these results is easier after at least one feed has been given.
- If no galactose-containing milk feed is given, mark "TPN"/soy based"/"other" on the card.



Please refer to the [Newborn Bloodspot Screening Policy Directive](#) for further information.

Vitamin K prophylaxis¹⁹

- Vitamin K prophylaxis has been used to prevent Haemorrhagic Disease of the Newborn in NSW since 1971.
- The NHMRC guidelines recommend that all newborn infants should receive vitamin K prophylaxis and receive an intramuscular injection of 1mg (0.1ml) of Konakion MM at birth.
- For very preterm infants (birth weight <1.5kg), 0.5mg (0.05ml) is recommended.

- The guidelines also recommend that parents receive written information during the antenatal period about the importance of Vitamin K, and the options of intramuscular or oral treatments.
- Infants admitted to Grace Centre for Newborn Intensive Care should have received Vitamin K prior to admission. During the admission, further doses of Vitamin K may be required if an oral preparation was used.
- Check the Personal Health Record (Blue Book) or referring hospital's discharge summary on admission to see if Vitamin K has been given at birth and the route used
- The administration of IV Vitamin K is not approved for use in Australia; it may be given on a written order from the neonatologist.
- Prior to administration, ensure that there is a written order for the dose and that the medical officer signs it.
- Before giving an intramuscular injection, administer sucrose at least two minutes prior to the procedure.
- On discharge or transfer, ensure that the infant's Vitamin K status is documented together with the due date of further doses in the discharge summary and health record book.
- If the infant is discharged home prior to the third dose of oral Vitamin K, reinforce the need to complete the three doses of Vitamin K when discussing discharge with the parents. A discharge prescription slip is required for each patient being transferred or discharged. The oral Vitamin K suspension will be dispensed from pharmacy. The ward stock is not to be used for this purpose.

Hepatitis B Immunisation²⁰

Hepatitis B infection is transmitted by exposure to infective body fluids such as blood, saliva, semen and vaginal fluid. It is most commonly acquired from an infected sexual partner, from shared injection equipment, from an infected mother to child at or around the time of birth, and from close personal contact with a carrier living in the same household.

The purpose of hepatitis B immunisation policies are to either eliminate hepatitis B infection or reduce the transmission of the virus and thereby reduce infection, the development of the hepatitis B carrier state and the development of long-term sequelae.

- Neonates born to HBsAg positive mothers are to be offered, hepatitis B immunoglobulin (HBIG) within 12 hours of birth and a total of four doses of hepatitis B vaccine to be administered at birth, two, four and six months of age.
- All other neonates are to be offered a total of four doses of hepatitis B vaccine at birth, two, four and six months of age. The birth dose is to be administered using a monovalent thimerosal-free vaccine, and offered within 7 days of birth. The subsequent three (3) doses may be given in a combination vaccine as part of the routine Australian Standard Vaccination Schedule (ASVS).

- All infants admitted to Grace Centre for Newborn Intensive Care are to have their Hepatitis B immunisation status documented in electronic medical record and in their Blue Book.

Caveat to guidelines

- If the infant is scheduled for cardio-pulmonary by-pass surgery, check with the cardiac surgeon prior to administration.
- If the birth dose has not been given within the first 7 days post-birth, a catch-up dose is not necessary and the infant should receive a 3-dose course of a hepatitis B-containing vaccine to be considered fully vaccinated

Hearing Screening Program²¹

The NSW State wide Infant Screening - Hearing (SWISH) Program is aimed at identifying all babies born in NSW with significant permanent bilateral hearing loss by 3 months of age, and for those children to be able to access appropriate intervention by 6 months of age.

Identification is achieved through universal hearing screening of all newborns. The Newborn hearing screening in GCNIC Procedure has been developed for full procedure details.

- The screening section of the program involves the screening of all newborns in NSW using Automated Auditory Brainstem Response (AABR) technology.
- If newborns do not pass hearing screening they are referred for diagnostic audiological assessment.
- Parent/carer brochures describing the SWISH program are available in English and 16 other community languages, in both paper form and via the NSW Health website.
- Consent is obtained from the parents and documented in the electronic medical record.

Specific Instructions

- The procedure is performed by the SWISH team.
- The babies likely to be discharged are tested first.
- Ideally, the baby should be drowsy or asleep for 30 minutes.
- If the infant is active or irritable, defer test until settled.
- If the test yields a 'refer' result on one or both ears, the test is repeated. If a second 'refer' result is obtained, the infant is referred to the CHW Audiology Department who will arrange a diagnostic appointment.
- The results of the tests are documented in the Blue Book and on the electronic medical record.

Caveat to guidelines

- If the infant is back transferred before testing is complete, contact the Audiology Department who will arrange an appointment off-campus or as an outpatient.

Please refer to the [Newborn Hearing Screening in Grace Centre for Newborn Intensive Care](#) procedure document for further information.

Vaccinations

- Inpatients receive their Vaccinations at 2 months (or after 6 weeks) of age.
- The neonatologist will approve the order to receive the dose.
- Written consent is obtained from the parents by the registrar/fellow/NP.
- Once administered, vaccinations are documented in the electronic medical record, the blue book, and the GCNIC Admission book.
- Ensure standard precautions are maintained for 2 weeks following the infant receiving the live vaccine (e.g. Rotarix) as it is excreted in the body fluids.

Refer to the [SCHN Immunisation guidelines](#) for additional information.

Assessment

- An assessment is undertaken of the infant's physical, physiological, and behavioural responses at the commencement of each shift.
- The assessment is document in the electronic medical record
- This is used as the benchmark for changes that occur throughout the shift, and in addition to the progress notes.

Monitoring and Vital signs

At the commencement of each shift, the monitor alarms should be reviewed and set to parameters according to the infant's condition.

At a minimum, all patients must have a complete set of clinical observations conducted at admission and also at 4-6 hourly intervals in accordance with cue-based caregiving. The frequency of observations should also be increased as indicated by the patient's condition, treatment specific practice guidelines/protocols and clinical judgment of the clinicians, but may not be decreased below the minimum frequency unless there is a documented Variation to Frequency of Observations order in place.

A full set of observations includes:

- Blood pressure
- Heart rate
- Oxygen saturation
- Pain Score
- Respiratory distress

- Respiratory rate
- Temperature

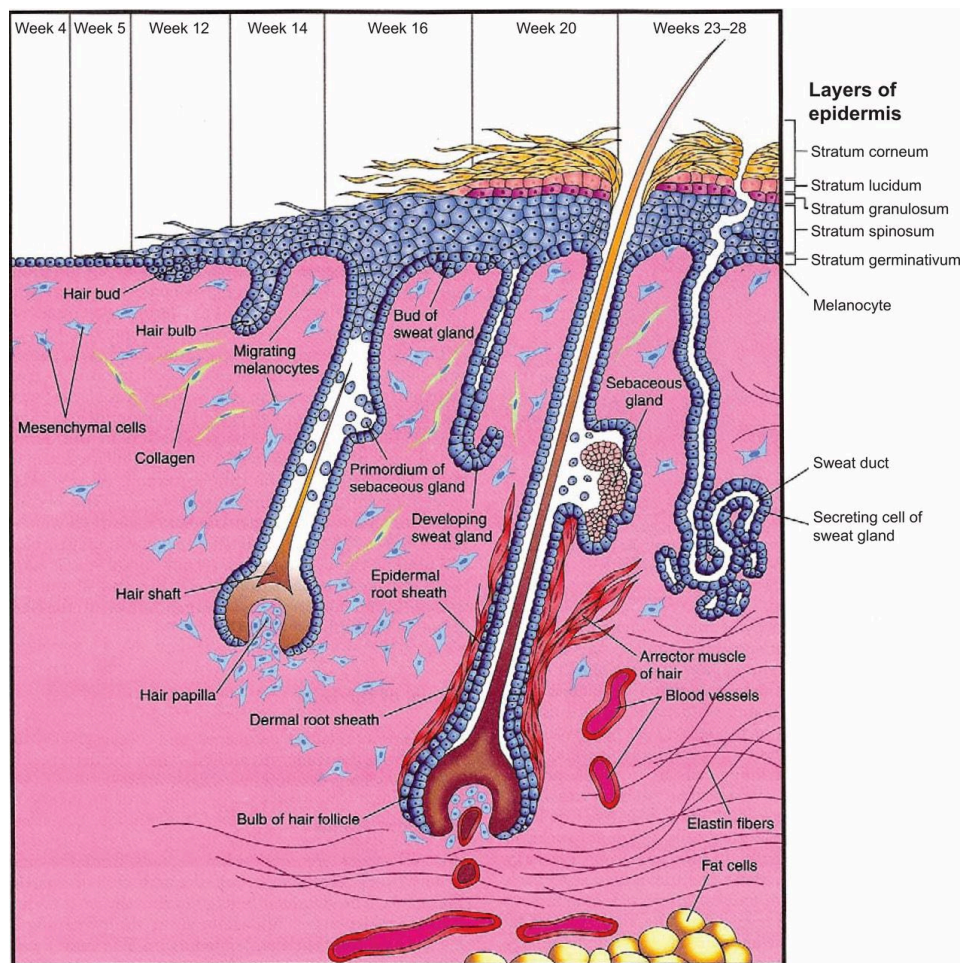
Skin care²²⁻²⁵

The skin (which comprises approximately 13% of a newborn's body weight) plays an important role in assisting newborns to adapt to extra-uterine life. It functions as a barrier against toxins and microorganisms, plays a role in water and electrolyte excretion; assists with thermoregulation; and, is a reservoir for fat storage and insulation. It also operates as the primary interface for tactile sensation^{23 & 24}.

Physiologic and Anatomic Variation in Term Newborn and Premature Infant Skin

Unique physiologic and anatomic differences are found in neonatal and premature infant skin compared to adults. An understanding of these differences is essential to the care and management of neonates and their skin^{22 & 23}.

	Term Neonates	Preterm
Basic Characteristics of the Skin	Coated in vernix caseosa (containing sebum, broken-off lanugo, desquamated cells from the amnion, and water). Vernix begins to form at 17-20 weeks and inhibits growth of pathogens and provides immunological properties.	Thinner skin, transparent-looking, poorly keratinised, ruddy-coloured due to the blood vessels being closer to the surface.
Stratum Corneum and Epidermis	10-20 layers found in full term newborns. Stratum corneum functions as skin barrier.	Fewer layers of stratum corneum than in full-term neonates. Less stratum corneum = large fluid and evaporative heat losses (which can lead to electrolyte imbalances and dehydration).
Dermis and Epidermis	Dermis is thinner and is not as well developed as the adult dermis. Fibrils connect the dermis and epidermis layers and provide functional integrity between these layers.	Fibrils are fewer than in full-term neonates and are more widely spaced. Decreased cohesion between the dermis and epidermis = increased risk for skin injury (especially with removal of adhesives: e.g. epidermal stripping).
Skin pH	Born with an alkaline skin surface (pH > 6) which decreases to less than 5 within the first 96 hours of extra-uterine life.	Born with a pH > 6 on the first day of life which decreases slowly, reaching pH of approximately 5 by the end of the first month of life



Principles of Skin Care

- Complete a skin assessment at least once a shift using the Neonatal Skin Risk Assessment Scale. Skin assessment scores are documented in the electronic medical record and strategies applied based upon on the score. Reassessment frequency is based upon the infants score.
- Identify risk factors for skin integrity breakdown.
- Prevent pressure areas by ensuring the infant is not lying on leads and sheet folds.
- If pressure points develop, document them in electronic medical record and complete an IIMS report
- Decrease the use of adhesives as much as possible to prevent epidermal stripping.
- Use alcohol-free antiseptic agents (e.g. aqueous chlorhexidine) prior to invasive procedures.
- Use a memory foam mattress for infants at risk of skin breakdown. For infants who are at extreme risk of integrity breakdown (e.g. muscle relaxed infants), an air mattress can be used instead (please speak to the NUM on shift for assistance in organising this).

- Evaluate all substances that come into contact with the infant's skin and use them sparingly.

Assessment of the Skin

Routine assessment of the skin is integral to providing good care, allowing for assessment of risk for breakdown of skin integrity and for early identification and treatment of skin problems.

Assess the skin surfaces from head to toe, making sure to assess for the following:

- Dryness
- Erythema (redness)
- Skin breakdown

Presence of transient benign skin conditions including²⁴

- Milia: benign keratinous cysts that commonly manifest as tiny white bumps on the face
- Miliaria (heat rash)
- Toxic erythema of the newborn
- Colour changes from vascular instability
- Desquamation (peeling skin)
- Birthmarks

Prevention of Skin Injury and Breakdown²²

The prevention of skin injury and breakdown is an important component of neonatal skin care. It involves:

- The identification of risk factors for skin injury and breakdown
- Assessment of the skin under medical devices
- Determining potential causes of skin breakdown and injury, including epidermal stripping, pressure areas, surgical wound dehiscence, and extravasation

Risk Factors for Skin Breakdown and Injury²²

It is important for nursing staff to identify the various risk factors that may increase the risk of skin injury and breakdown. These include risk factors such as:

- Prematurity (gestational age less than 32 weeks)
- Oedema
- Dehydration
- Hypotension
- Immobility due to illness or sedation
- The use of vasopressors, sedatives, and paralytics

- The use of endotracheal tubes, nasogastric or orogastric tubes, vascular access devices, monitors, electrodes and probes
- Surgical wounds and ostomies
- Therapeutic hypothermia
- The use of CPAP
- High frequency ventilators
- Extra-corporeal Membrane Oxygenation (ECMO)
- Prolonged electro-encephalographic (EEG) monitoring
- Potential causes of skin breakdown and injury such as: adhesive removal, burns/thermal injury, abrasion/friction, nappy rash, pressure ulcers, infections, and cooling blankets

The Use of Medical Adhesives and Epidermal Stripping²⁵

The use of adhesives to secure a range of devices and tubes is commonplace in the NICU. The removal of these adhesives has been identified as primary cause of skin breakdown in neonates in the NICU.

Epidermal stripping is the term used to refer to the removal of one or more layers of the epidermis following the removal of adhesive tape or dressing. The skin injury occurs when the skin-to-adhesive attachment is stronger than skin cell-to-skin cell attachment. As a result, the epidermal layers separate or the epidermis separates completely from the dermis.

To prevent medical adhesive-related injuries such as epidermal stripping:

- Ensure adequate nutrition and hydration to prevent skin breakdown and facilitate wound healing
- Select and use appropriate medical adhesives to secure life support, monitoring, and other devices in all newborns, and remain mindful of the fact that the removal of these adhesives can cause skin injury and pain
- Choose medical adhesives that cause the least tissue trauma while effectively securing medical devices (e.g. use silicone-based adhesives, hydrocolloids, polyurethane films, hydrogels, or silver dressings for wounds or large areas that have experienced epidermal stripping)
- Consider protecting the skin from medical adhesives with protective films (e.g. No Sting Barrier Film)
- Remove medical adhesives slowly and gently on a horizontal plane that is parallel to the skin surface, using sting-free adhesive removal wipes (e.g. Niltac) to loosen the adhesive bond

Cover Dressing	Moisture Retention		Exudate Management
	Transparent Film Dressing	Hydrocolloid - Sheets & wafers	Foam Combination Dressings
Wound Bed			
Wound Filler	Wound Hydration	Exudate Management	
	Hydrogels - Amorphous & sheets	Hydrocolloid - Paste & powder Collagen sheets	Alginates Hydrofibers
Infection	Antimicrobial		
	Silver Honey		

Pressure Areas²²

Pressure areas are localised injuries or ulcers that result from unrelieved pressure (in the form of pressure, shear forces and/or friction) against an area of skin and/or the underlying tissue (usually over a bony prominence).

A pressure area injury occurs when blood vessels collapse under external pressure, causing the blood supply to the cells to be cut off, limiting oxygen supply, and decreasing nutrients to the cells. This results in tissue hypoxia, leading to the development of localized tissue ischaemia, cellular death, and tissue necrosis.

Most pressure area injuries are preventable. Prevention of pressure areas involves risk assessment and the implementation of prevention strategies.

Risks factors associated with pressure areas include:

- Decreased sensory perception due to chemical paralysis or neurological disturbances
- Prolonged mechanical ventilation
- The use of Continuous Positive Airway Pressure (CPAP) devices
- Altered skin integrity due to oedema, fluid resuscitation or moisture (including incontinence and perspiration)
- Comprised tissue perfusion and oxygenation
- Hypotension
- The use of vasopressor medications

- Hypovolaemia
- Hypothermia
- Poor nutritional status, dehydration and/or fluid restrictions

Prevention strategies include:

- Regularly repositioning the neonate
- Regularly assessing the skin under medical devices such as CPAP masks and prongs (ensure that CPAP prongs never rest against the septum)
- Regularly reposition tubes, face masks and probes and electrodes every few hours as applicable to the individual patient
- Removing CPAP headgear during each shift (at least every 4-6 hours) to assess the head and ears for pressure areas
- Preventing maceration of the skin by managing excessive moisture by attending to cares regularly, changing absorbent pads regularly and using skin barrier products as required
- Using a memory foam mattress for at-risk infants

In the event a pressure injury is identified:

- Notify medical staff and NUM
- Photograph and document in the electronic medical record
- Complete an IMMs
- Review current pressure relieving strategies and devices. Consider if additional strategies need to be incorporated
- Establish management and review plan for wound
- Document on Neonatal Skin Assessment Tool increasing the frequency of assessments
- Hand over to staff caring for infant for the next shift

Surgical Wound Dehiscence

Dehiscence of a surgical wound refers to the partial or complete separation of a surgically closed wound. This potential surgical complication may be infrequent in the neonatal population, however, when it does occur; it requires immediate and effective wound management. Ongoing assessment of the surgical site includes:

- Inspection of the wound edges
- Inspection around the sutures and/or sutures
- Observing the presence of any swelling, warmth, redness or discolouration of the surgical site

If wound dehiscence is suspected, the NICU medical team should be notified immediately and the patient should be reviewed. This should then result in involvement of the surgical team who will provide treatment and wound management advice. It is very important that nursing

staff clearly document the wound assessment, and the ongoing wound care plan in both their assessment and progress notes on electronic medical record.

Intravenous Extravasation/Infiltration²³

Intravenous extravasation/infiltration is the leaking/administration of an infusing intravenous fluid or medication into the surrounding tissue instead of into the intended vascular pathway. Both peripheral and central vascular access devices are capable of causing extravasation. Nursing staff are required to complete hourly assessment of the venous catheter site and the surrounding tissue and documenting the findings of this assessment in electronic medical record in the Vital Signs Flowsheet.

In the event an infiltration injury is identified:

- Refer to Staging severity of IV infiltration table in the Peripheral Cannula and Central Venous Catheter Management in Neonates Clinical Practice Guideline
- Follow recommendations as per document
- Complete and IMS
- Photograph the injury and document in the electronic medical record

Please refer to the [Peripheral Cannula and Central Venous Catheter Management in Neonates – GCNIC Clinical Practice Guideline](#) for further information.

Nappy rash (Nappy Dermatitis)²²⁻²⁵

Nappy rash (also known as nappy dermatitis) is an acute inflammatory reaction of the skin in the perineal region. It occurs due to a combination of factors such as:

- Prolonged skin wetness
- Prolonged contact with strong alkalinising agents such as urine, faeces, faecal enzymes and bile salts which alter the skin's pH, making it susceptible to skin breakdown
- Mechanical friction (in the form of skin-to-skin and nappy-to-skin) can make the skin prone to maceration whilst also increasing its permeability to other irritants

The severity of the condition can vary from very mild with no skin breakdown and erythema, to more severe and chronic form of nappy rash, which can feature painful excoriated and/or ulcerated lesions, which is commonly associated with the presence of *Candida albicans*.

It can be effectively treated by reducing contact of the skin with urine and/or faeces, and by frequently changing the nappy to keep the skin as dry as possible. The aim of treatment is to restore the skin's natural pH, to reduce irritation, trauma and skin permeability, and to reduce pain and discomfort.

- If the nappy area is soiled, clean with warm water and RediWipes. If unable to clean the area, use a drop of baby bath wash on the RediWipes wet with water. Remember to rinse off and ensure the genital area is dry.
- Identify and treat the underlying cause of the nappy rash (e.g. diarrhoea, opioid withdrawal)

- Protect the injured skin and any surrounding skin at risk of being exposed to irritants by applying barrier creams and pastes.
- Infant's affected skin can be exposed to air to promote healing whilst avoiding hypothermia. Maintain normothermia by wrapping the infant's body well and monitoring temperature.
- Wear disposable gloves to change nappies for your own protection against bodily secretions.
- Discard gloves and wash hands after changing nappies to prevent cross-infection.
- Dispose of the nappies according to hospital's waste management guidelines.
- Thrush (caused by a fungal infection such as *Candida albicans*) may develop due to moist conditions and broken skin barriers. Refer to the Medical Officer for treatment with the appropriate cream.
- Evaluate the effectiveness of therapeutic interventions by assessing the area for improvement each shift. If there is no response, inform the medical team, as allergic contact dermatitis should be considered as a potential diagnosis.

Nappy Dermatitis

Nappy Dermatitis also known as 'nappy rash' is an acute inflammatory reaction of the skin in the perineal region. The severity of the condition can vary from mild with erythema and no skin breakdown to severe with chronic erythema, excoriation and ulcerated lesions; this can be commonly associated with the presence of candida albicans.

Classification:



Mild Nappy Dermatitis

Erythema (2-10%), intact skin, some irritation detected

Treatment:

Zinc oxide 15.25% e.g. Sudocream applied with each nappy change, increase frequency of nappy changes (4hrly), ensure thin translucent layer



Moderate Nappy Dermatitis

Erythema (10-50%) covering areas including buttocks, genitals, pubic area, and upper thighs or very intense redness in a small area (<2%), few papules/pustules, superficial opening of the skin involving the epidermis

Treatment:

Introduction of barrier cream with zinc oxide 20% e.g. critic cream (thin translucent layer, continue use for min 48hrs), increased frequency of nappy changes 2-4hrly or when soiled, bottom baths with nappy changes when able



Severe Nappy Dermatitis

Erythema (>50%) covering areas including buttocks, genitals, pubic area, and upper thighs or very intense redness in a small area (2-10%), shiny, bleeding, many or clustered papules/pustules, deep dermal open skin with damage to the dermis

Treatment:

Barrier cream with zinc oxide 20% (critic cream) +/- Cavilon no sting barrier (swabs or spray, applied before barrier cream), increased frequency of nappy changes/when soiled, nappy free time, bottom baths with nappy changes when able



Candida Albicans (Thrush)

Severe bright red elevated patches that can be found around the anus, top of the thighs and in the skin folds. Vesicles (like a small, raised cyst or fluid-filled blister) and pustules around the rash is also an indication of thrush.

Treatment:

Miconazole + Zinc Oxide Cream (15%); (Daktazin): Apply a thin layer of cream sufficient to cover the affected area and rub in to the skin. Continue use uninterrupted until the lesions have completely healed. Candida infections should be treated for 7 days or until healed

Additional treatment option:

Cholestyramine cream can be prescribed for patients that have high concentrations of bile acid in their stool e.g. Biliary Atresia, Short gut syndrome, Cystic fibrosis, Liver disease (malabsorption of fat) or Ostomies. This is prescribed by medical staff and ordered from pharmacy.

High Risk Patients:

- Condition specific: Short-gut syndrome, Spina bifida, Hirschsprung's, Imperforate Anus, Patients w/ Ostomies
- Fortified feeds/added calories
- Long term/long course antibiotics (>7 days)
- Prematurity
- Intrauterine Growth Restriction (IUGR)
- Withdrawing patients (NAS)

Avoid:

- Thick layering of creams that block the absorbency of the nappy
- Changing the skin care regime sooner than 48hrs unless skin condition has significantly deteriorated
- Aggressive rubbing of the skin

What causes 'Nappy Dermatitis'?

- Prolonged skin wetness (over hydration and maceration)
- Prolonged contact with strong alkalising agents such as urine, faeces, faecal enzymes and bile salts which alter the skin's pH, making it susceptible to skin breakdown
- Mechanical friction (in the form of skin-to-skin and nappy-to-skin)

Prevention:

- Zinc oxide (15.25%) e.g. Sudocream applied with each nappy change
- Identify if your patient is a high risk neonate
- Change nappies when heavily wet or soiled
- Increase frequency of nappy changes if baby is constantly stooling or on diuretics
- Ensure nappy size is appropriate to avoid friction
- Wipe bottom with warm wet wipes (even when nappy is only wet) and allow time to air dry or pat dry don't rub
- Using Silic 15 as a hydrating protective barrier in high risk patients

Developed by Molly Smith, CNS, Grace Centre for Newborn Intensive Care, SCHN June 2022

Preterm infants^{23 & 24}

Before 28 weeks, the skin of the extremely low birth weight infant is thin and poorly keratinized with weak barrier properties. Evaporative heat losses are high and percutaneous absorption of topically applied agents may be harmful.

Their skin can be easily damaged by adhesive tapes. There is an increased risk of sepsis secondary to skin breakdown and pain resulting from skin excoriation and pressure ischaemia and/or necrosis.

Patient Safety

- Use water-based topical antiseptics rather than alcohol based. If this is not possible, use the alcohol solutions sparingly and wash off with sterile water. Change the bedding if alcohol solution has pooled.
- Use aqueous chlorhexidine as an antiseptic solution.
- Use all topical agents sparingly.

Care technique

- Keep handling of the infant to a minimum.
- Keep probes that are attached to the skin to a minimum.
- Minimize the use of medical adhesives where possible.
- Where possible, use water to remove tape from the skin.
- Humidify the crib to reduce trans-epidermal water losses (TEWL) for the first week of life.
- Use a hydrogel based tape covered with non-stretchable tape for securing the infant's limbs to medical devices such as an IV cannula board.
- Use a protective barrier films (e.g. no-sting barrier film, Stomahesive) or hydrocolloid adhesives (e.g. coloplast) between the skin and other medical adhesives.
- Use hydrogel ECG electrodes as these cause minimal damage to the infant's skin. Alternate the ECG electrode sites where possible.

Please refer to the [GCNIC Small Baby Protocol](#) for further information.

Baby Diary

- The baby diary is used to enable the families to have a record of the milestones that occur during their infant's stay in Grace Centre for Newborn Intensive Care.
- Explain the purpose to the families and show them the craft box (at the nurses' stations in both sections of the NICU), encouraging them to participate in the diary-making.
- Staff are also encouraged to contribute to the record of events.

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