**Lecture 12: Ward management of a neonate**

**Introduction**

 Neonates are a specialised cohort of patients requiring an individualised approach in nursing care.   
The four major components of neonatal nursing care are warm, pink, sweet and calm.   
Goals of care should address these components and include the following:

* + Minimising stress
  + Energy conservation to enhance recovery
  + Promote growth and overall wellbeing
  + Protecting sleep pattern

**Aim**

To provide safe, comprehensive specialised care of a neonate in the ward environment when it is not clinically necessary for a Neonatal Intensive Care Unit (NICU) admission.

**Definition of Terms**

* + **Neonate**: An infant, less than 28 days old
  + **Term baby**: 37- 42 weeks gestational age
  + **Convection**: Loss of heat to air currents
  + **Conduction**: Loss of heat to object in direct contact with infant
  + **Evaporation**: Loss of heat by evaporation of water from the skin or respiratory tract
  + **Radiation**: Loss of heat to nearby cold, solid surfaces
  + **mPAT**: Modified Pain Assessment Tool
  + **FLACC**: Face, Legs, Activity, Cry and Consolability
  + **WAT**: Withdrawal Assessment Tool
  + **Neutral Thermal Environment**: An environment in which the infant has a minimal metabolic rate, meaning oxygen consumption and energy expenditure are minimal.

**A Registrar or Consultant should assess the neonate and be considered clinically stable and appropriate for ward management prior to the ward accepting care of the neonatal patient.**

**Observations and Monitoring**

 Baseline and ongoing observations should occur as per the [Clinical Guideline (Nursing) Observation and Continuous Monitoring](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Observation_and_continuous_monitoring/)and [Clinical Guideline (Nursing): Nursing Assessment](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Nursing_assessment/)

The Neonate needs to be admitted onto the monitor profile so that alarm limits are specific to age and weight.

For Neonatal patient’s particular attention should be placed on the following aspects of assessment:

**Temperature & Neutral Thermal Environment**

The normal temperature of a neonate ranges from < 36.5oC – 37.5oC, temperature should be measured per axilla every 4 hours, unless febrile or hypothermic. [Clinical Guideline (Nursing): Temperature Management](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Temperature_management/).

* + A full medical review and full septic work up should be considered for any neonate with a temperature > 38oC. Refer to [Clinical Practice Guidelines: Sepsis assessment and management](https://www.rch.org.au/clinicalguide/guideline_index/SEPSIS_assessment_and_management/)
  + A temperature of ≤36.5oC is considered hypothermic and a medical review is required. Nursing interventions can include:
    - An extra layer (clothing/blanket) should be added, and the temperature should be repeated hourly.  If the temperature remains at 36.5oC or below, the neonate should be considered for transfer to an ATOM infant warmer. Refer to the [Clinical Guideline (Nursing): Assisted thermoregulation](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Assisted_thermoregulation/).
    - Hourly temperatures should be checked until there are two consecutive temperatures equal to or greater than 36.6oC

Neonates are particularly vulnerable to heat loss via convection, conduction, evaporation and radiation. Therefore ensure:

* + Neonates are dressed appropriately with a singlet, jumpsuit, socks, wrap and blanket. Hats and knitted beanies are not endorsed in the ward environment.   
    Refer to  [Clinical Guidelines (Nursing): Safe Sleeping](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Safe_sleeping/).
  + Cot placement should be maintained 1 metre away from windows to avoid drafts.
  + Minimal handling and clustering of cares.   
    Refer to: [Clinical Practice Guidelines: Minimal Handling](https://www.rch.org.au/clinicalguide/guideline_index/Minimal_handling/)

**Transfers**

* + When a neonate needs to be transferred between departments, appropriate measures to maintain their temperature need to be ensured.
  + Consider utilising an ATOM infant warmer immediately post operatively for a stabilisation period (4-24 hours). This allows for frequent unwrapping for clinical assessments and decreases the incidence of heat loss.
  + Neonates returning from theatre to the wards need to have a temperature of ≥36.5 C, prior to leaving recovery
  + Prior to transfer, any potential or active risks for infectious diseases should be advised to the receiving unit to maintain appropriate precautions and use of personal protective equipment for infection control.

**Pain**

* + Assess pain using mPAT or FLACC scale
  + Assess withdrawal using WAT score
  + For information regarding the mPAT Refer to: [Clinical Guideline (Nursing) : Neonatal Pain Assessment](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Neonatal_Pain_Assessment/), Further information regarding FLACC scale can be found via [Clinical Guideline (Nursing) Pain Assessment and Measurement](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Pain_Assessment_and_Measurement/)
  + For more information regarding the management of procedural pain for infants please refer to: [Clinical Guideline (Nursing): Sucrose oral for procedural pain management in infants](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Sucrose_oral_for_procedural_pain_management_in_infants/).

Procedural sedation for Koala ward neonates:

* + Oral Chloral Hydrate 30mg/kg initially, additional 20mg/kg following 20-30mins if required. [Refer to: Procedural Sedation for Ward and Ambulatory Areas](https://www.rch.org.au/policy/policies/Procedural_sedation_%E2%80%93_ward_and_ambulatory_areas_%E2%80%93_at_RCH/) (RCH Access only)

**Blood Sugar Level**

* + A blood sugar level should be measured on admission for all neonates.
  + Further BSL frequency dependent on:  
    - Severity of illness
    - Risks of hypoglycaemia
    - Clinical signs of hypoglycaemia
    - Changes made to glucose infusions

Please refer: [Clinical Guidelines (Nursing): Neonatal Hypoglycaemia](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Neonatal_Hypoglycaemia)

**Enteral Intake**

* + Establish feeding routine and history: breast fed, EBM, formula fed, or on nasogastric tube feeds
  + Assess the most appropriate feeding method (oral/nasogastric)
  + Feeds are required to be ordered in EMR. For breast feed neonates, feeding stickers with attached QR codes need to be printed and given to the parents. Please refer: Ordering EBM or Formula EMR Tip Shee
  + All feeds should be scanned to the patient to ensure correct feed administration.
  + Strict recording of enteral input including duration of breast feeds and pre and post weights and/or, formula volumes and/or EBM volumes should be recorded in EMR flowsheets.
  + If the neonate is too unwell to feed, breast-feeding mothers should be supported to express and store their breast milk. For further information please see the [Clinical Guideline (Nursing): Breast Feeding Support & Promotion](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Breastfeeding_support_and_promotion/).
  + If poor oral intake, the neonate needs to be assessed for insertion of a nasogastric tube or commencement of IV fluids.
  + Consider referral to RCH Lactation Consultant or Maternal Child Health Nurse

The following table shows *suggested*feeding volumes by age, however this table is an approximate guide only and requirements will differ according to gestational age and disease process.

|  |  |
| --- | --- |
| **Age** | **ml/kg/day** |
| Day 1 - 4 | Commence at 30 to 60 ml/kg/day and increase over the next few days as tolerated |
| Day 5 - 3 months | 150ml/kg/day; some infants especially preterm may require 180-200ml/kg/day as clinically indicated |
| 3 months - 6 months | 120 ml/kg/day |
| 6 months - 12 months | 100 ml/kg/day; some infants may reduce to 90ml/kg/day as clinically indicated |

*Source: National Health and Medical Research Council (2012) Infant Feeding Guidelines. Canberra: National Health and Medical Research Council*

**Output**

The following should be assessed and documented:

* + Urine Output should be measured & nappies weighed   
    - Urine output should be ≥ 1ml/kg/hr, variances to this should be considered and signs of clinical dehydration be reported to the treating team.
  + Bowel actions - frequency, consistency and colour,
  + Vomiting - frequency and colour.
  + If NGT in situ, - colour, quality, amount of aspirate and regular pH testing to confirm correct placement of NGT prior to feed or medication administration. Refer to: [Clinical Guideline (Nursing) Enteral feeding and medication administration](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Enteral_feeding_and_medication_administration/).

**General Considerations**

* + Check the General Child Health Record
  + Immunisation Record
  + Newborn Screening Test. Refer to: [Clinical Guideline (Nursing) Newborn Bloodspot Screening](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/newborn-bloodspot-screening/)
  + Hearing screening. Refer to [Hearing Screening VIHSP](http://www.vihsp.org.au/)

**Intravenous Fluid Management**

|  |  |  |  |
| --- | --- | --- | --- |
| **Age** | **ml/hr** | **ml/kg/day** | **Recommended Fluid** |
| 0 - 24 hours | weight x 2.5 | 60ml/kg/day | 10% Dextrose |
| 25 - 48 hours | weight x 2.5 | 60ml/kg/day | 10% Dextrose |
| 49 - 72 hours | weight x 3 | 72ml/kg/day | \*10%Dextose+NaCl+KCl |
| > 72 hours | weight x 4 | 96ml/kg/day | \*10%Dextose+NaCl+KCl |

\* Ordered as 10 per cent dextrose 500 mL and 6.5 mL 20 per cent NaCl and 10 mL 7.5 per cent KCl (giving 22 mmol NaCl and 10 mmol KCl per 500 mL)

*Source: Neonatal eHandbook - IV Infusions for Special Care Nursery Admissions*

Considerations if oral or nasogastric feeds are not tolerated or suitable, and IV fluid therapy is initiated. When selecting an appropriate IV fluid the following should be considered:

* + Neonates require solutions with a minimum of 10% dextrose to meet their increased metabolic demand and decreased energy reserves.
  + A maximum fluid rate of 100mls/kg/day should not be exceeded without consultation/approval from treating medical team and Neonatal consultant.
  + Restriction of fluids is often required and needs to be considered in the sick neonate
  + Blood Gases, BSL and UEC’s prior to commencement and 24 hourly (sooner if clinically indicated) for neonates on maintenance IV fluids.
  + Baseline weights should be recorded then frequency as clinically indicated. At a minimum twice weekly but for a sick neonate on IV fluids more frequent weights will be necessary.
  + Syringe driver and minimum volume tubing should be used for administration of IV fluids and medications (i.e. Intravenous antibiotics).
  + Please refer to[Intravenous Fluid Infusions for Special Care Nursery Admissions](https://www.bettersafercare.vic.gov.au/clinical-guidance/neonatal/intravenous-infusion-for-special-care-nursery-admissions) and [Neonatal Intravenous Fluid Management](http://www.vihsp.org.au/).

**IV and CVAD access in Neonates**

* + For more information regarding the management of CVADS in neonates including Umbilical catheter and PICCs please refer to [RCH Procedure Central Venous Access Device](https://www.rch.org.au/policy/policies/Central_Venous_Access_Device/)
  + IV cannula sites should be visible and not covered.
  + Assessed hourly due to increased risk of pressure injuries and extravasation.   
    - For more information please refer to the [Clinical Guideline (Nursing): Extravasation Injury Management](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Extravasation_Injury_Management/) and [Clinical Guideline (Nursing) Peripheral Intravenous IV Device Management](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Peripheral_Intravenous_IV_Device_Management/)

**Skin Care**

* + Assessment of skin integrity should occur on admission and at least once a shift (and at each nappy change as needed).
  + Assess neonate for risk factors of skin breakdown i.e. loose or frequent stools, drug withdrawal, medications that alter stool frequency or composition.
  + Nappy Area:  maintain skin integrity; apply a thick barrier cream that contains zinc oxide at every nappy change when having frequent or loose bowel actions well as at the first sign of erythema or skin breakdown.
  + Report any rashes to medical staff for review.
  + For further information refer to [Clinical Guidelines (Nursing) : Neonatal & Infant Skin Care](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Neonatal___Infant_Skin_Care)

**Sleep Maximisation**

* + Optimal sleep is essential for normal growth and development and aids recovery.
  + Term neonates usually sleep 16-18 hours per day for normal growth and development.
  + Minimal handling and clustering of cares while the baby is awake. [Clinical Practice Guidelines: Minimal Handling](https://www.rch.org.au/clinicalguide/guideline_index/Minimal_Handling/)
  + Encourage lighting use to reflect day and night patterns.  This helps develop normal transition to night time sleeping patterns
  + Supporting quiet times to encourage sleep and settling behaviours.
  + Refer to [Clinical Guidelines (Nursing) : Neonatal sleep maximisation in the hospital environment](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Neonatal_sleep_maximisation_in_the_hospital_environment)
  + Refer to [Clinical Guidelines (Nursing) : Safe Sleeping](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Safe_Sleeping/)
  + Ensure safe sleeping recommendations have been discussed with family prior to discharge home

**Parent Engagement**

Illness and separation causes increased stress and anxiety on the infant and their family, and this has been proven to affect brain development and subsequent neurodevelopmental progress in childhood. Therefore, it is essential that every effort is made to nurture the parent-infant bond by encouraging families to interact with their babies as much as possible, from as early as possible. For more information refer to [COCOON](https://www.rch.org.au/cocoon/).  
  
Encourage engagement through:

* + Participating in feeding
  + Attending to nappy cares
  + Facilitating bathing
  + Providing routine
  + Skin to Skin Care