Monitoring of infants and clinical nursing observations standards on NNU

University Hospitals of Leicester NHS Trust

Trust ref: C23/2010

1. Introduction and Who Guideline applies to

This guideline is aimed at all Health care professionals involved in the care of infants within the Neonatal Service.

Key Points

- This guideline refers to ECG monitoring and oxygen saturation monitoring
- Decisions to discontinue monitoring should be clearly documented.
- All babies of **less than 34 weeks** must be on continuous monitoring (with accompanying documentation of observations).
- The minimum observations in special care should be recorded every six hourly temperature, heart rate, respiratory rate and oxygen saturations (until rooming in).
- Decisions to discontinue observations and monitoring should be clearly documented

Related documents:

Oxygen Saturations in Preterm Infants UHL Neonatal Guideline UHL ref: C129/2006

Background Information

A survey of UK neonatal units has demonstrated a lack of consensus regarding guidelines for electronic monitoring of infants. In addition, there is little published evidence with very few published guidelines available. Therefore, this guideline represents a consensus opinion within the Leicester Neonatal Service.

A significant apnoea is defined as a sudden cessation of breathing that lasts for at least 20 seconds - or shorter if accompanied by bradycardia or oxygen desaturation - in an infant younger than 37 weeks gestational age.

The incidence of apnoea of prematurity by gestational age at birth is:

26 to 29 weeks	75%-78% of infants
30 to 31 weeks	54%
32 to 33 weeks	14%
34 to 36 weeks	4-7%
Term infant apnoea	1-2%

(Data from references 4 and 5 (Grade C))

2. Guideline Standards and Procedures

2.1 Continuous Monitoring

Cardiac Monitoring (ECG)

Commence ECG monitoring in:

1. All infants receiving ventilator support.

2. Infants born at less than 34 weeks gestation

3. Infants with apnoea / bradycardia of prematurity.

4. Infants receiving a blood transfusion. This may be removed on completion of the transfusion.

5. When investigating cardiac arrhythmias.

Once an acute illness has resolved, a clinical decision regarding continuation or discontinuation of ECG monitoring should be made by the attending senior clinician.

Pulse Oximetry (SpO2)

Who to monitor?

1. All acutely unwell infants who are physiologically unstable (or physiological status unclear).

2. All infants with respiratory distress (or respiratory compromise and/or apnoeas).

3. All infants born at less than 34 weeks gestation until they reach 34 weeks gestation (unless otherwise documented).

4. All Infants requiring supplemental oxygen:
   - These infants should usually be monitored for at least two days after oxygen has been ceased.
   - For infants with only a transient, short-lived oxygen requirement this monitoring time may be reduced at the discretion of the attending clinician.
   - Oxygen saturation monitoring should continue for 72 hours after stopping oxygen treatment in those infants with chronic lung disease.

5. Infants who are not yet established on full enteral feeds.

6. All infants receiving a course of caffeine require monitoring and for a minimum of two days after stopping caffeine.

7. Any other infant about which there are clinical concerns and where monitoring might benefit assessment and clinical care.

2.2 Criteria for discontinuing continuous monitoring

1. Once an acute illness has resolved, a clinical decision regarding continuation or discontinuation of monitoring should be made.

2. Once no significant apnoeas have been recorded for 5 consecutive days monitoring may be discontinued unless there are other concerns (e.g. caffeine, prematurity, feeding difficulties). Significant apnoeas are defined below.

3. Once a decision has been made on the flow of oxygen for a baby going home in oxygen

4. Decisions to discontinue monitoring MUST be clearly documented in the patient's medical record.

2.3 Further notes

1. Occasional Fleeting desaturations without bradycardia may not be a reason in themselves to continue oxygen saturation monitoring.

2. Consideration should be given to discontinuing monitoring, should there be a plan for discharge home or 'rooming in' within 2-3 days.

3. The criteria for discontinuing monitoring do not apply to basic clinical observations which may be expected to continue after oxygen saturation monitoring has been discontinued.

2.4 Clinical Recording and Documentation Standards

All Babies need to have initial observations taken on admission and recorded directly on badger (within one hour) including

a. Heart rate
b. Respiration rate
c. Temperature (including time taken)
d. Oxygen Saturations
e. Blood pressure if indicated.

Following admission observations are;

Group 1: Intensive care / High dependency patients (BAPM level A or B) Hourly documentation of observations

1. All acutely unwell infants who are physiologically unstable (or physiological status unclear).
2. All infants with respiratory distress (or respiratory compromise and/or apnoeas).

Infants on respiratory support.
In unwell babies commence monitoring of BP 2-4 hrly or more often depending on the clinical condition of the baby.

Group 2: Special Care Infants requiring continuous monitoring (BAPM level C or D)

SIX HOURLY DOCUMENTATION OF OBSERVATIONS
(6 hourly is the absolute minimum frequency of documentation)

1. All infants born at less than 34 weeks gestation until they reach 34 weeks gestation (unless otherwise documented).

2. All Infants requiring supplemental oxygen:
    a. Consider monitoring if needed
    b. If they need oxygen for long time these infants should usually be monitored for at least two days after oxygen has been ceased.
    c. Oxygen saturation monitoring should continue for five days after stopping oxygen treatment in those infants with chronic lung disease.

3. Infants who are not yet established on full enteral feeds.

4. All infants receiving a course of caffeine require monitoring and for a minimum of two days after stopping caffeine.

5. Infants with central line access.

6. Any other infant about which there are clinical concerns and where monitoring might benefit assessment and clinical care.

Group 3 – Special care Infants not requiring continuous monitoring (BAPM level C or D)

Six hourly observations of:

- Heart Rate
- Respiratory Rate
- Temperature
- Oxygen saturation (adhere to oxygen limit saturation guideline)

6 hourly is the minimum frequency, except for infants rooming in whereby 12 hourly is acceptable.

Specific monitoring requirements

Infants who require phototherapy need to be commenced on monitoring and observations every 6 hourly if on single phototherapy and continuous saturation monitoring for double phototherapy. The observations can be recorded six hourly. Once phototherapy is discontinued monitoring can be stopped.

Infants receiving blood product transfusion need to restart continuous monitoring and observations. These observations need to be started pre transfusion and recorded hourly (in accordance with the monitoring requirements of the Department of Transfusion Medicine). Six hours after transfusion has finished the baby can return to the previous level of observations.

In guidance with the immunisation guideline, all infants born;

1. Born at 29+0 weeks gestation
2. Receiving their immunisation on NNU
3. Having desaturations / bradycardias in the 72 hours pre-immunisation
4. Babies in supplemental oxygen receiving their first immunisation in hospital should be monitored for 48-72 hours.

These babies should have heart rate and saturation monitoring carried over for 48-72 hours after receiving the immunisations on the neonatal unit

Infants with suspected PPHN or Cardiac disease on Prostin - Pre and post ductal SaO2 monitoring (more than 10 preductal sats higher should not be ignored)

2.5 Changes to frequency of observations

Changes to the frequency of recording of observations should be documented on the daily management chart and in the patient record. The decision to discontinue continuous monitoring should be documented in the patient record.

3. Education and Training

None

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Decisions to discontinue monitoring will be clearly documented (100%).	Audit	Consultant		Governance committee
All infants less than 34 weeks gestation will receive oxygen saturation monitoring (100%).	Audit	Consultant		Governance committee

5. Supporting References

1. The Royal Children's Hospital Melbourne (2019) Observations and continuous monitoring

2. Eichenwald, E.C., (2016). Apnea of prematurity. *Pediatrics*, *137*(1).

3. Balain, M. and Oddie, S., 2014. Management of apnoea and bradycardia in the newborn. *Paediatrics and Child Health*, *24*(1), pp.17-22..

4. Engle WA, Tomashek KM, Wallman C; Committee on Fetus and Newborn, American Academy of Pediatrics (2007). "Late-preterm" infants: a population at risk. Pediatrics 120(6):1390-401.

5. D. Roland, J. Madar, G. Connolly. The Newborn Early Warning (NEW) system: development of an at-risk infant intervention system. Infant 2010; 6(4):116-20.

6. Immunisation on the NNU Guideline

6. Key Words

ECG monitoring, Neonatal, Oxygen saturation monitoring

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS			
Guideline Lead (Name and Title) Original author: Richard Hall **Lead :** Sumit Mittal - Consultant			**Executive Lead** Chief Nurse
Details of Changes made during review:			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
Jul – Aug 2010	**1**		Original guideline
Mar 2016 - 19/4/2016	**2**	REM Neonatal Guidelines Meeting CNN Network meeting Neonatal Governance Meeting	Review by author (REM) no significant changes required ongoing plan to merge with Clinical Observations guideline – work not yet completed review in 12 months
July 2017	**3**	Neonatal Guidelines Meeting Neonatal Governance Meeting	(Network guideline reviewed by REM – no indication to amend Trust guideline)
July 2020 – September 2020	**4**	Neonatal Guideline Meeting Neonatal Governance Meeting	
Nov - Dec 2023	**5**	Neonatal Guideline & Governance Meeting	Oxygen saturation monitoring should continue **for 72 hours** (previously 5 days) after stopping oxygen treatment in those infants with chronic lung disease. Added in group 1 babies; In unwell babies commence monitoring of BP 2-4 hrly or more often depending on the clinical condition of the baby. Monitoring pre, during and post immunisations guidance updated. Infants with suspected PPHN or Cardiac disease on Prostin - Pre and post ductal SaO2 monitoring; Added **(more than 10 preductal sats higher should not be ignored)** **Title of document changed**