

8. Infant and Family Centred Developmental Care Toolkit: Safeguarding Sleep

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For use in: EoE Neonatal Units

Guidance specific to the care of neonatal patients.

Used by: This guideline is intended for all healthcare professionals and staff working within the neonatal unit. The principles outlined should also be shared with parents, supporting a collaborative approach to caring for premature or unwell infants.

Key Words: Sleep, safeguarding sleep, preterm infants, neurodevelopment, growth, circadian rhythm, family, environment, education, individualising care, cue-based care, infant behaviour.

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Introduction:

Sleep is a fundamental biological process that plays a critical role in the growth, development, and overall wellbeing of newborn infants.

Better sleep organisation has been associated with improved developmental and cognitive outcomes⁸. The ability to transition smoothly between sleep and wake states and to regulate the transition between different states of alertness demonstrates neurodevelopmental maturation⁴.

The neonatal intensive care environment can present multiple challenges to the protection of sleep, including frequent clinical interventions, noise, lighting, and handling. Sleep disturbance has been associated with poor neurodevelopmental outcomes, altered stress responses and impaired growth.⁸

Safeguarding sleep has a vital and complex role in developmentally supportive care^{1,4} and requires a coordinated, multidisciplinary approach.

Sleep patterns of preterm infants undergo age-dependent maturational changes, and sleep preservation is essential for normal neurodevelopment. Sleep protection supports and promotes feeding skills, adequate growth, and can reduce length of stay for these infants.^{1,4}

This guideline outlines best practices to promote, protect, and optimise sleep and behavioural/arousal states for infants admitted to the neonatal unit.

Partnering with families

There is overwhelming evidence which supports the understanding that parents' presence on the Neonatal unit and partnership in the care of their baby is an essential component of delivering quality developmental care and improving developmental outcomes for infants.^{1,2} It is imperative that we coach and empower parents so that they can provide appropriate and individualised support for their baby at the right time. See '*partnering with families*' section for further guidance.

Background

Sleep is an essential process for an infant that supports brain and cognitive development as well as promoting physical growth⁷. REM (rapid eye movement) sleep and sleep cycles play an important role in the early development of the sensory and motor systems in the foetus and the young infant⁸. Sleep cycles with REM and NREM (non-REM) sleep are vital for the preservation of brain plasticity⁸. Brain plasticity is an important process of the brain having the capacity to change, adapt and learn in response to environmental experiences.

A baby born at term would typically be observed to have 6 behavioural states- 3 of which are sleep states (see Appendix 1). The cycling between different sleep states has a functional purpose in brain development. Sleep cycles are essential

for the development of the neurosensory and motor systems in particular the creation of memory and long-term memory circuits.⁸

Infants born prematurely and those who have been unwell can have difficulty in organising and maintaining consistent robust sleep and wake states⁸.

Interference with sleep and disruption of sleep cycles can significantly interfere with the early processes of sensory development.⁸

Sleep-wake maintenance is regulated by integrated input from the circadian system.⁷ The circadian system is intrinsic to multiple physiologic functions, including body temperature regulation, hormonal production and secretion, and blood pressure control.⁷ A circadian rhythm may emerge earlier for preterm infants compared with full term infants.^{4,12} Further research is emerging regarding the impact of a disrupted circadian rhythm on long-term health outcomes.¹³

The hospital environment, need for routine and emergency care presents many challenges in protecting and supporting an infant's sleep. With all hospitalised infants, attention to appropriate timing of caregiving according to the infant's sleep and arousal is therefore an essential part of care.²

Clustered caregiving has demonstrated some benefits, such as allowing for consolidated rest. However, it is typically implemented without consideration of individual infant factors such as medical diagnoses, gestational age, or severity of illness. Findings regarding clustered caregiving efficacy remain inconsistent. A Cochrane systematic review is currently in process to better understand the advantages and disadvantages of this approach.^{10,11}

- In the absence of a definitive view on clustering care, 'cue-based care' has emerged as an alternative model of care giving. Cue-based care advocates that routine care is delivered according to each infant's behaviour state and engagement cues, emphasising individualised and developmentally supportive care.¹¹ (See *Individualising Care – Infant behaviour section*)

Aims
• Protect and safeguard sleep
• Promote developmentally appropriate sleep and behavioural states
• Optimise environment to promote safe sleep and behavioural states

Recommendations to help safeguard sleep^{1,2}
Provide supportive positioning & care practices ⁵ that support infant sleep.
• Provide developmental care strategies appropriate for the age and maturation of the infant (see <i>Healing Environment, Positioning and Handling, and Individualising Care – Infant behaviour sections of the EoE Developmental Care Toolkit</i>).

A culture of sleep protection should be advocated for and supported by all staff working on the neonatal unit, including support staff, to create an environment that supports the sleep states of infants and recognises the importance that sleep has on growth and neurodevelopment.
Day and nighttime environment and interactions with infants should consider and support the development of circadian rhythm. ^{4,12}
Consider timing of non-emergency routine care procedures (e.g. routine lab/xrays/medical examinations) in relation to infants sleep & arousal state ¹ Consider postponing during sleep states and avoiding during nighttime for babies post term. ⁶
Observation of infant state and availability for interaction should be documented as part of cares and assessments.
Parents and families should be provided with information regarding the importance of sleep to support an infant's care and development. This should include: Recognition of sleep states How they can support sleep How infant's sleep behaviours change Safe sleep recommendations and modelling of safe sleep practices in preparation for discharge ³ A sensory routine to support sleep ^{14,15} (as appropriate in consultation with unit Therapist).
Health care professionals should receive training on: The importance of sleep during infancy and impact on growth and development Sleep-wake cycles in term and preterm infants How developmental care practices can support infant sleep Recognising infant behavioural cues and how to individualise care (to support sleep) Recognising how sleep needs and behaviours changes with gestation e.g. infants have different abilities in habituating to stimuli and protecting sleep. ^{9,15} Supporting the development of sleep-wake cycle in an infant.
Neonatal unit environment should be assessed by members of developmental care team/MDT to provide the infant with an environment that supports sleep (see healing environment section)

The East of England Neonatal Network has guidelines which also support safeguarding of sleep and should be referred to in addition to this document.

- Developmental Care Toolkit:2 Individualising Care – Infant behaviour
- Developmental Care Toolkit:3 Partnering with families
- Developmental Care Toolkit:4 Healing Environment
- Developmental Care Toolkit:5 Facilitating Skin to Skin
- Developmental Care Toolkit:6 Positioning & Handling
- Clinical Guideline: Pain Management

The guidelines can be found on the East of England Neonatal ODN website.

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Appendix 1

Sleep states⁹

[Brazelton UK behavioural states poster](#)

Sleep states

Deep sleep

My eyes are closed with no eye movements.
My breathing is soft and regular.
My body is still, but I may occasionally startle or have sucking movements.

💡 Sleep is important for your baby as it is the time when they grow and develop. Try not to wake your baby up when they are in a deep sleep.

Light sleep

My eyes are closed or fluttering. You may see some rapid eye movements under my eyelids.
I may have some body and face movements.
My breathing may be more irregular.

💡 During this time you may want to keep noises and disturbances to a minimum if you would like your baby to continue to sleep as they may be more easily disturbed.

Drowsy

My eyes may open and close, my eyelids are heavy.
My movements are smooth and I may suck.
I will react to noise and touch.

💡 During this time your baby will either move to light sleep or to an awake, alert state. Watch, wait and see what your baby will do.

Awake states

Quiet alert

My eyes are open and bright.
My body is relaxed and still.
I focus and show interest in faces, voices and objects around me.
I may smile and make cooing or gurgling sounds.

💡 This is the time to enjoy chatting and playing with your baby, which is so important for their developing brain. Remember at this young age your baby can only maintain this state for short periods, they will show you when they need a break (see 'Helping your baby to take a break').

Fussing

My body will be moving much more.
I may make more sounds like fussing.
I become much more sensitive to noise and movement.

💡 This is your baby's way of telling you something is bothering them and needs to change. Try slowing things down or changing position. Your baby may be hungry, tired or need a nappy change. Or they may want to talk more.

Crying

My eyes may be closed tight and my face will grimace.
My body will be moving lots.

💡 Your baby is telling you they need something different. It is not always easy to know why your baby is upset and how to respond. By getting to know your baby over time, and through trial and error, you can make sense of what it is they want. (See 'Soothing and settling my baby').



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