

Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Key findings, outcomes or recommendations
<p>Tenunis, C., Hoogen, A., Benders, M., Dudink, J., Shellhaas, R., and Pillen, S. (2017) How to improve sleep in a neonatal intensive care unit: A systematic review. <i>Early Human Development</i>, 113, 78-86</p>	I	<ul style="list-style-type: none"> • Neonates spend most of their time sleeping. • Active sleep is important for fetal and neonatal brain maturation. • Lack of active sleep in early stages of brain development leads to behavioural problems and sleep disturbances. • Kangaroo care improves sleep and organisation of sleep-wake states. • Gentle human touch promotes increased sleep and decreased awake and ‘fussy’ states. • Cycled lighting effects day-night time activity after 20-30 days. • Incorporating sleep measurements into assessments increases awareness of sleep as a key factor of neonatal health. • Postpone elective care procedures during sleep.
<p>Holditch – Davis, D., Nan Barham, L., O’Hale, A., and Tucker, B. (1995). Effects of standard rest periods on convalescent preterm infants. <i>Journal of Obstetric, Gynaecologic and Neonatal Nursing</i>, 24, 424.</p>	II	<ul style="list-style-type: none"> • More sleep and less active states during naps with regular rest periods. • Differentiation between day and night increases sleep. • Further research required on the long-term effect of nap intervention
<p>Rivkees, S. A., Mayes, L., Jacobs, H., and Gross, I. (2004). Rest-activity patterns of premature infants are regulated by cycled lighting. <i>Pediatrics</i>, 133 (4), 833-839.</p>	II	<ul style="list-style-type: none"> • Cycled lighting induces distinct patterns of activity and rest synchronised with the light-dark cycle • Cycled lighting is preferable than continuous dim lighting in pre-term infants. • Exposing pre-term infants to cycled lighting does not disrupt sleep or organisation.

<p>Onen, S. H., Alloui, A., Gross, A., Eschallier, A., and Dubray, C. (2001). The effects of total sleep deprivation, selective sleep interruption and sleep recovery on pain tolerance in healthy subjects. <i>Journal of Sleep Research</i>, 10, 35-42.</p>	<p>IV</p>	<ul style="list-style-type: none"> • Changes in sleep patterns may influence the perception of pain. • The lowering of pain threshold appeared to correlate with the duration of sleep deprivation.
<p>Ma, G., Segawa, M., Nomura, Y., Kondo, Y., Yanagitani, M., and Higurashi, M. (1993). The development of sleep- wakefulness rhythm in normal infants and young children. <i>Tohoku Journal of Experimental Medicine</i>, 171, 29-41.</p>	<p>IV</p>	<ul style="list-style-type: none"> • In the early stage of infancy, the environmental factors are important for the normal development of the circadian rhythm. • 12 midnight to 4am is the absolute sleep period by 3 months of age.
<p>Centre for Community Child Health. (2006). Settling and sleep problems. Practice resource. Downloaded from: www.rch.org.au/ccch on 14th May 2009</p>	<p>VII</p>	<ul style="list-style-type: none"> • Ninety five per cent of newborns wake every 3 – 4 hours at night and require an adult to help them go back to sleep. • Sleep habits are learned behaviours that are affected by biological and genetic factors and developmental changes. • Sleep consolidation begins between the hours of midnight and 5am.
<p>Bertelle, V., Sevestre, A., Laou- Hap, K., Nagahapitiye, M. C., and Sizun, J. (2007). Sleep in the neonatal intensive care unit. <i>Journal of Perinatal and Neonatal Nursing</i>, 21 (2), 140-148.</p>	<p>VII</p>	<ul style="list-style-type: none"> • Sleep has an important role in the development and function of the brain. • Sleep deprivation has a negative impact on health and development. • Mean duration of sleep cycles 40-70 minutes. • Observational indications of sleep states. • Cycled lighting may be a better environment to achieve a more physiologic homeostatic state. • Clustering of cares and interventions increase durations of rest periods

<p>Davis, K. F., Parker, K. P., and Montgomery, G. L. (2004). Sleep in infants and young children: part one: normal sleep. <i>Journal of Pediatric Health Care</i>, 18 (2), 65-71.</p>	<p>VII</p>	<ul style="list-style-type: none"> • Newborns sleep for 16 -18 hours in 24 hours. • Circadian rhythm emerges around 2-3 months when infants become increasingly responsive to environmental cues such as light and dark and social cues such as feeding, nap times, and night-time routines.
<p>Lavie, P. (2001). Sleep-wake as a biological rhythm. <i>Annual Review of Psychology</i>, 52, 277- 303.</p>	<p>VII</p>	<ul style="list-style-type: none"> • Cycled lighting reflecting day and night helps develop normal transition to nighttime sleeping patterns.
<p>Heussler, H. S. (2005). Common causes of sleep disruption and daytime sleepiness: childhood sleep disorders II. <i>Medical Journal of Australia</i>, 182 (9), 484-489.</p>	<p>VII</p>	<ul style="list-style-type: none"> • Newborn babies sleep 16-18 hours in 24 hours. • Influences of daylight and dark cycles produce more wakefulness during the day. • 95% of infants will cry after waking and require a response to help them settle.
<p>Merenstein, G. B., and Gardner, S. A. (2006). <i>Handbook of Neonatal Intensive Care</i>. Sixth Edition. Mosby Elsevier. United States of America.</p>	<p>VII</p>	<ul style="list-style-type: none"> • Consistent routines help to regulate the neonate's rhythms. • Neonates should not be woken while sleeping. If they must be woken, it should be during active sleep by gentle touch and talking. • Clustering of cares and interventions increase durations of rest periods. • Quiet time assists neonates to become used to sleeping in dim and quieter environments.