

Community Paediatric Review

Current issues in children's health and development



Centre for Community Child Health

Vol 23 No. 4 November 2015

Sleep and the early years

In the first years of life, not sleeping can be a very complicated, and even distressing part of life for a family. Sleeping and settling are learned skills for a baby, and they are skills that do not always come naturally. The disruption that sleep problems can create for a family can be significant.

Sleep problems are also very common in the years leading up to school. Between 30 and 40 per cent of children will experience sleep problems, including night waking and problems at bedtime (Waters, Suresh & Nixon, 2013).

An Australian study (Hiscock et al, 2014) looked at whether there was any difference in outcomes between families who received an infant sleep intervention, and families who did not. Parents in the intervention group received information about what constitutes typical infant sleep, crying and feeding; and advice on settling techniques and recognising tired signs.

While there was no statistically significant difference between sleep for control and intervention group babies overall, parents in the intervention group reported improved outcomes. The parents in the intervention group had:

- fewer doubts about their parenting skills
- fewer difficulties with limit setting
- a reduced likelihood of spending 20 minutes or more attending to their child overnight, and
- a reduced likelihood of changing the baby's formula to try to change the baby's sleeping habits.

These effects were reported when the baby was aged between four and six months old. Further, for the subgroup of babies whose parents reported that they had sleep and crying problems before the intervention started (i.e., when babies were around four weeks old), the intervention did improve parent report of sleep and crying. Taken together, these findings indicate that working with families to provide information and reassurance is essential and beneficial.



Normal sleep patterns for babies

Over the course of a night babies might either wake completely, or come into very light sleep after each cycle of deep sleep.

- We all cycle through deep and light sleep (babies every 20 to 50 minutes, adults every 90 minutes).
- In deep sleep babies lie still, breathe evenly, and sometimes jerk.
- In light sleep babies look restless, groan, and sometimes open their eyes and look around the room.
- For babies, sleep cycles can last 20 to 50 minutes, meaning they can wake up many times overnight. This is normal – often a baby will re-settle on their own without parents being aware.
- Like any skill, sleep gets harder to do when overtired.

Centre for Community Child Health

The Royal Children's Hospital Melbourne
email publications.ccch@rch.org.au
www.rch.org.au/ccch



Average sleep needs for children

The amount of sleep that we need gradually reduces with age until it stabilises around the age of 20 (Sleep Health Foundation, 2015). As illustrated by the table below, the recommended amount of sleep varies over ages, and within those age brackets there is further significant variation depending on the child. In addition, day-to-day factors such as the health of the child, growth spurts, illness, and the amount of noise and activity in the household will also alter the amount of sleep a child needs, and is able to have.

Age	Recommended	May be appropriate	Not recommended
0–3 months	14–17 hours	11–13 hours	Fewer than 11 hours
		18–19 hours	More than 19 hours
4–11 months	12–15 hours	10–11 hours	Fewer than 10 hours
		16–18 hours	More than 18 hours
1–2 years	11–14 hours	9–10 hours	Fewer than 9 hours
		15–16 hours	More than 16 hours
3–5 years	10–13 hours	8–9 hours	Fewer than 8 hours
		14 hours	More than 14 hours

(Sleep Health Foundation, 2015)

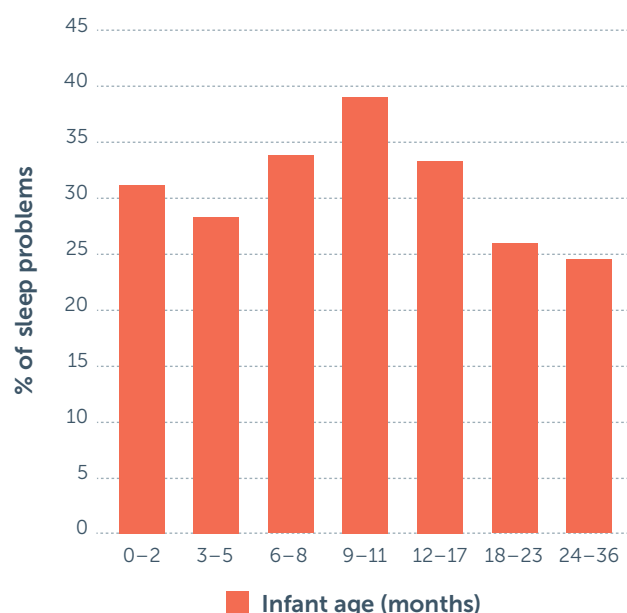
Actual sleep duration for Australian children

Recommendations for sleep duration do not necessarily correlate with reality. Researchers drew on data from the Longitudinal Study of Australian Children, or LSAC, in order to develop a more representative picture of the amount of sleep that Australian children actually get. Price et al (2014) used LSAC data to review the sleep habits of Australian children who were aged between zero and nine years. They found very large variations at all ages for sleep duration, as well as for sleep onset time, and particularly for wake time.

Age	Total hours sleep per 24 hours
4–11 months	4–6 months: Least, 10 hours; most, 18 hours*
	7–9 months: Least, 9 hours; most, 16 hours*
	10–12 months: Least, 9 hours; most, 15 hours*
1–2 years	13–15 months: Least, 9 hours; most, 15 hours*
	28–33 months: Least, 9 hours; most, 14 hours*
3–5 years	34–39 months: Least, 8 hours; most, 14 hours*

(Price et al, 2014) *Please note, these figures have been rounded to the nearest whole hour.

Other research studies have found that almost two-thirds of parents report that their baby is 'sleeping through the night' by 12 weeks of age. It is important to note that 'sleeping through' is defined as sleeping without fully waking, calling out or crying for between five and seven hours (Anders, Halpern & Hua, 1992; Anders & Keener, 1985; Moore & Ucko, 1957; St James-Roberts, 2007, 2012). For the remaining third of parents, their baby's sleep can provide ongoing stress.



Prevalence of parent-reported sleep problems between infant ages 1–24 months (Teng et al, 2012).

The range of sleep duration, as shown in the data from the Price et al study, may be of use to child and family health nurses in your work counselling parents and families about the wide range of 'normal' when it comes to their child's sleep.

Problems arising from insufficient sleep

Insufficient sleep has serious consequences for developing children as well as for adults. For children, poor sleep is associated with an increased risk of obesity (Cappuccio, Taggart, Kandala, et al, 2008; Patel & Hu, 2008), poorer academic results (Blunden, Hoban & Chervin, 2006; Wolfson & Carskadon, 1998), and increased risk of injuries and accidents (Koulouglioti, Cole & Kitzman 2008). For children and their families, poor sleep can lead to poorer parent mental health and poorer quality of life (Martin, Hiscock, Hardy, et al, 2007).

While problems with infants' sleeping, feeding and crying are commonly experienced by families in the first year of baby's life, for some families those problems can persist – with concomitant effects for quality of life and fatigue. A longitudinal study, nested within the Baby Business trial, found that just under half of the 503 families, retained at 24 months, experienced persistent sleep, feeding or crying problems with their infant beyond the baby's first year – 30 per cent of children had one problem, 11 per cent had two, and 3 per cent had three persistent problems (Tobin, 2015).

Families whose babies experience these persistent problems are likely to utilise a range of health services with greater frequency than those families whose babies do not experience persistent problems, thus creating financial and social costs, as well as increasing stress for the family. The total cost to the system of sleep problems between the ages of zero and seven years was estimated at AUD\$27.5 million in a 2013 study that drew on LSAC data (Quach, Gold & Hiscock et al, 2013).

Parent fatigue

An infant's sleep problems also, naturally, affect the parents. The resultant fatigue is commonly associated with difficulties concentrating and maintaining attention, and low mood (Tobin, 2015). This fatigue also impacts on parenting. Cooklin, Giallo and Rose (2012) surveyed 1276 Australian parents using the Revised Fatigue Assessment Scale and measured:

- parental practices (warmth, involvement and irritability)
- parental experiences (stress and competence)
- social support
- parent sleep patterns
- self-care, and
- general health.

Their study showed that higher levels of parent fatigue were associated with lower levels of parent-reported competence, and increased parent stress and irritability. A lack of social support, a poor diet and sleep quality, and ineffective coping styles were also associated with increased parent fatigue. Similar results were shown by Dunning and Giallo (2012), who demonstrated that parenting stress could fully account for, or mediate, the association between parenting fatigue and parent self efficacy.

Working with parents to establish good sleep routines for their baby can help to mitigate the serious consequences of insufficient sleep for baby, and for parents and families. Child and family health nurses can work in partnership with families to help them to get more information about the broad range of normal in baby's sleep patterns and cycles, and to help families to learn more about their own baby's sleep cues. If parents have a way of managing their child's sleep needs, which can be tailored to their own goals and is feasible for them and their baby, managing their child's sleep in the early years may be easier.

Tired signs for infants

Parents can become familiar with the signs of tiredness in their own baby. Commonly, babies will follow this pattern in the first three months:

- After daytime feeds, baby is usually happy. This 'happy-awake time' is less than 15 minutes in the first few weeks and 60 to 90 minutes by three months.
- There comes a point when baby starts to grizzle or cry – this is bedtime.
- Other tired signs in babies in the first three months include:
 - jerking arms or legs
 - yawning
 - frowning
 - arching back
 - staring
 - stiffness.

Babies older than four months may also rub their eyes when tired.

It's important for parents to be alert to these signs and use them as a prompt to commence wind-down activities for their baby before sleep.

Sharing practical information with parents can help them to develop positive sleep behaviours in their infants and to establish safe sleeping practices that suit their own circumstances and priorities. A greater awareness of sleep patterns and the different strategies that promote good sleeping behaviours can also support parents through periods where sleeping is a problem and, in some cases, alleviate or prevent severe sleep problems.

References

- Anders, T F, Halpern, L F & Hua, J (1992). Sleeping through the night: a developmental perspective. *Pediatrics*, 90(4), 554–560
- Anders, T F & Keener, M (1985). Developmental course of night-time sleep-wake patterns in full-term and premature infants during the first year of life. *Sleep*, 8, 173–192
- Blunden S, Hoban T F, Chervin R D (2006). Sleepiness in children. *Sleep Medicine Clinics*; 1(1): 105–118
- Cappuccio F P, Taggart F M, Kandala N B, et al (2008). Meta-analysis of short sleep duration and obesity in children and adults. *Sleep*; 31(5):619–626
- Cooklin, A R., Giallo, R & Rose, N (2012). Parental fatigue and parenting practices during early childhood: an Australian community survey. *Child: Care, Health & Development* 38(5), 654–664. doi: 10.1111/j.1365–2214.2011.01333.x
- Dunning, M J & Giallo, R (2012). Fatigue, parenting stress, self-efficacy and satisfaction in mothers of infants and young children. *Journal of Reproductive and Infant Psychology* 30 (2), 145–159. doi: 10.1080/02646838.2012.693910
- Hiscock, H, Cook, F, Bayer, J, Le, H N, Mensah, F, Cann, W, St James-Roberts, I (2014). Preventing Early Infant Sleep and Crying Problems and Postnatal Depression: A Randomized Trial. *Pediatrics*, 133(2), e346–e354. doi: 10.1542/peds.2013–1886
- Koulouglioti C, Cole R, Kitzman H (2008). Inadequate sleep and unintentional injuries in young children. *Public Health Nursing*, 25(2):106–114
- Kuriyama K, Stickgold R, Walker M P (2004). Sleep dependent learning and motor-skill complexity. *Learning & Memory*, 11(6):705–713
- Martin J, Hiscock H, Hardy P, et al (2007). Adverse associations of infant and child sleep problems and parent health: an Australian population study. *Pediatrics* 2007; 119: 947–955
- Matricciani, L A, Olds, T S, Blunden, S, Rigney, G, Williams, M T (2012). Never Enough Sleep: A Brief History of Sleep Recommendations for Children. *Pediatrics*, Volume 129, Number 3, March 2012
- Moore, T & Ucko, L E (1957). Night Waking in Early Infancy: Part I. *Archives of Disease in Childhood*, 32, 333–342
- Patel S R, Hu F B (2008). Short sleep duration and weight gain: a systematic review. *Obesity (Silver Spring)*; 16(3):643–653
- Price, A M H, Brown, J E, Bittman, M, Wake, M, Quach, J, Hiscock, H (2014). Children's sleep patterns from 0 to 9 years: Australian population longitudinal study. *Archives of Disease in Childhood* 99:2 DOI: 10.1136/archdischild–2013–304150
- Quach J, Gold L, Hiscock H, et al (2013). Primary healthcare costs associated with sleep problems up to age 7 years: Australian population-based study. *BMJ Open* 3:e002419. doi:10.1136/bmjopen–2012–002419
- Sekine M, Chandola T, Martikainen P, Marmot M, Kagamimori S (2006). Work and family characteristics as determinants of socioeconomic and sex inequalities in sleep: the Japanese Civil Servants Study. *Sleep*; 29(2):206–216
- Sleep Health Foundation (2015). Sleep Needs Across the Lifespan. Retrieved from www.sleephealthfoundation.org.au 2 September
- St James-Roberts, I (2007). Infant Crying and Sleeping: Helping Parents to prevent and manage Problems. *Sleep Medicine Clinics*, 363–375
- St James-Roberts, I (2012). *The Origins, Prevention and Treatment of Infant Crying and Sleeping Problems*. United Kingdom: Routledge
- Teng, A, Bartle, A, Sadeh, A, & Mindell, J (2012). Infant and toddler sleep in Australia and New Zealand. *Journal of Paediatrics & Child Health*, 48(3), 268–273. doi: 10.1111/j.1440–1754.2011.02251.x
- Tobin, S (2015). Outcomes of Isolated and Multiple Persistent Regulatory Problems at Age 24 Months: Follow-up of the Baby Business Randomised Controlled Trial. (Unpublished doctoral thesis). Swinburne University of Technology, Melbourne
- Waters, K A, Suresh, S, Nixon, G M (2013). Sleep disorders in children. *MJA*; 199: S31–S35 doi: 10.5694/mja13.10621
- Wolfson A R, Carskadon M A (1998). Sleep schedules and daytime functioning in adolescents. *Child Development*. 69(4):875–887

Family violence and universal services



In 2015, Victoria held a Royal Commission into Family Violence. The Commission began its work in February 2015 and is expected to release its final report and recommendations to the Victorian State Government in February 2016.

Professor Frank Oberklaid, Director of the Centre for Community Child Health, was asked to provide evidence to the Royal Commission about family violence and child health. A portion of Professor Oberklaid's submission is reproduced here. To read his full submission, as well as other submissions to the Commission, visit: www.rcfv.com.au/Submission-Review

The impact of family violence on children

The social and psychological impacts of family violence on children can be as significant as the physical impacts. Exposure to maltreatment and family violence can have long-term effects on a child. It is therefore important to work with children from a prevention and early intervention perspective so that they do not grow up to be perpetrators themselves.

The research is now uncontested in regard to the deleterious effects of persistent stress on a young child and the developing brain. When a child's brain is developing and maturing it is so exquisitely sensitive to the effects of stress related to family

dysfunction, including exposure to violence. Toxic stress 'gets under the skin' and changes a child's physiology, and can have a long-term impact on their life. Once we understand the effects of the stress response we can begin to understand the intergenerational nature of family violence and child abuse.

We obviously cannot completely remove stress from a child's life. However, stress is not harmful when it is transient – for example when a child experiences the pain of an immunisation injection or when a child falls over and hurts themselves. It is also tempered by an adult who mediates the effect – for example, cuddling a child when they fall over. Toxic stress however, is persistent high levels of stress, and manifests in situations involving issues such as extreme poverty, family violence, mental health problems and sexual abuse, and where there is no adult to mediate its effect. Indeed, the adult may be the cause of that stress in the first place – for example in situations of abuse.

When stress hormones are high and persistent, they interfere very significantly with a child's optimal brain development. There is also increasingly robust evidence that what happens in the early years of a child's life can have life-long effects. Many adult conditions such as diabetes, poor literacy, mental health problems, criminality and family violence have pathways that begin in the early years.

The importance of early intervention

The attraction of early intervention, if approached correctly, is that risk is not destiny, and we can intervene to ameliorate the effects of toxic stress. Early childhood (antenatal to eight years of age) is the elephant in the room in terms of policy reform in Australia. A focus on young children is the key to our future prosperity as children grow up to be healthy and well-adjusted adults and make a contribution to society.

In addressing family violence it is important to recognise that family stress and dysfunction exists on a continuum, with abuse at the extreme end, like a bell curve. Traditional public policy is focused on trying to correct established and often entrenched problems at the extreme end of the spectrum. This means that large amounts of money are directed to a small number of individuals, at a time when the evidence to prove that established problems can be fixed at a population level is very slim. Rather than focusing only on the extreme end of the spectrum of abuse, we need also to be working to reduce the level of stress and family dysfunction for the whole population, and thus shift the whole bell curve to the left. These are often termed policies that 'shift the curve'.

It is also important to recognise that family violence issues exist alongside a number of other risk factors that also impact on children's health and development, and that they need to be addressed holistically. There will never be enough resources if the focus is only on intimate partner violence, or child abuse, or mental health, or alcohol/drug abuse, or homelessness, or any other single risk factor, and I am sceptical of any program that focuses on just addressing family violence while ignoring associated problems. Problems and risk factors tend to cluster together.

Early intervention is complex, expensive and long term. However, it is still infinitely cheaper than that person ending up in prison later in life because problems were not addressed early in the life cycle. Figure 1 shows the relatively low cost of implementing prevention and early intervention programs in the early years, compared with the increasingly high costs of responses in later years.

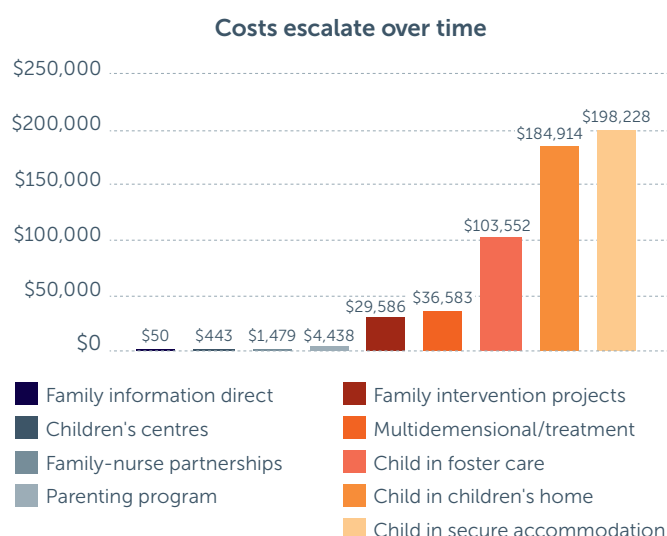


Figure 1 Intervention costs over the life course

Reference: Mike Powell (C4EO Project Accountant, 2010)

If prevention and early intervention are approached correctly, they are able to achieve improvements in both the short and long term. This will have major implications for Australia as a whole because building social infrastructure is ultimately more important to this country than building physical infrastructure. It is the key to productivity, and our ability to hold our own in an international economy, and to maintain social cohesion.

The role of universal services in early intervention

Any intervention must be based on relationships; the best chance of sustained behaviour change occurs in the context of a trusting relationship – for example when someone the person trusts or has a relationship with tells them that they need to stop drinking or that family violence is not acceptable. These sorts of relationships could be built with nurses or general practitioners. That is one of the reasons why universal platforms – preschools, child care, schools, community nurses, GPs – are so important because they are used and accessed by everyone.

A big challenge is therefore how to reconfigure those universal platforms to be able to identify risk factors and emerging problems and intervene early before problems become entrenched and so much more complex and difficult (and expensive) to treat. This would involve an extensive re-training and professional development agenda so that every nurse and doctor is sensitive to the signs and knows what to do once they have identified a problem.

These strategies should operate in the context of service mapping so that the universal providers know what and where relevant services are in the community. For example, we would not expect an early years professional (child care or preschool) to have clinical expertise. However we can, as an example, articulate her central role in the case of a child with persistent sleep problems, which is the cause of parental fatigue and family stress. The professional would:

- recognise that a mother looks tired
- ask her if she is ok
- listen when she explains that her child has not been sleeping, has been coming into her bed and that her husband is cranky because he has had to sleep in the child's bed
- refer the mother to someone who can assist with the problem, ideally making that appointment there and then, and
- follow up to make sure that the mother attends the appointment.

The above model is also applicable to family violence. The clues to family violence include things such as family stress, anxious mothers, and physical injuries like bruises or cuts. If nurses and GPs really get to know families, they would be able to pick up on these clues.

The professional working in a universal setting knows there is an issue, cannot ascertain what it is, but refers to someone in the community who can sort things out and takes responsibility for ensuring compliance with the referral.

There are, of course, various factors mitigating against the use of the above model. Other than expertise and a knowledge of the various services available in the community, the fee for service scheme for GPs creates a financial disincentive for them to become involved in these activities – there is a cost for them to spend an extra half an hour teasing out a patient's problems. GPs simply do not currently have the time.

The poor state of children's mental health services is a further issue that needs to be resolved, with unclear referral pathways and long waiting lists that make access often problematic. Paediatricians currently undertake the vast majority of children's mental health work in Victoria; they see many children with problems such as attention deficit and hyperactivity disorders (ADHD) and sleep issues however, a good paediatric assessment also looks at family factors. All paediatricians would see identifying family violence issues as their responsibility and would get involved with varying degrees of confidence and interest.

The principles of a family violence service response and place-based reform

There is no magic bullet in terms of designing an appropriate service response. Some of the risk factors for family violence (for example, alcohol and drug addiction, mental health issues and family stress) cluster together, and can have adverse outcomes for children even if they do not ultimately lead to family violence. This is why it is important to recognise that no single program is likely to be the sole solution. We need to consider stacked interventions or programs with five or six problems addressed by a range of different programs simultaneously.

The response must be broad, long-term, multi-faceted, whole-of-government and place-based so that every community is recognised as different in terms of its service mix, demographics and requirements. What works in Footscray may not work in Camberwell because of community attitudes, access to services, public transport, employment levels, culture, language and other such factors. A top down, 'one-size-fits-all' approach is unlikely to work. Local communities are much better equipped to advise on how to solve local problems.

We need to focus on wrapping services around families in need. We have a strong universal system that is accessible and affordable – child care, preschools and schools, MCH nurses, general practitioners. Every child and family needs a basic suite of these universal services; well-functioning families who access services need additions such as immunisation and reassurance that they are doing a good job. Other families need more than a basic suite of services – they function at the 'intensive care' end of the spectrum of needed social support. Issues or problems could be identified by professionals in the universal system who are then able to refer families for additional support and intervention as appropriate. The current fragmented service system does not do this well.

For the full submission and all the submissions to the Royal Commission, please visit www.rcfv.com.au/Submission-Review

About the Centre for Community Child Health

The Royal Children's Hospital Centre for Community Child Health (CCCH) has been at the forefront of Australian research into early childhood development and behaviour since 1994.

The CCCH conducts research into the many conditions and common problems faced by children that are either preventable or can be improved if recognised and managed early.

Community Paediatric Review

Community Paediatric Review supports health professionals in caring for children and their families through the provision of evidence-based information on current health issues.

Editorial panel

Carolyn Briggs
Karen Coffield
Libby Dawson
Dr Anastasia Gabriel

Production editors

Vikki Leone
Eliza Metcalfe

Enquiries and subscriptions

To see past editions and to subscribe go to www.rch.org.au/ccch/cpreview

Centre for Community Child Health

The Royal Children's Hospital Melbourne
email publications.ccch@rch.org.au
www.rch.org.au/ccch

Melbourne
Children's

A world leader
in child and
adolescent
health



Steps for settling your baby



Centre for Community Child Health

November 2015



Your baby's tired signs

Become familiar with your baby's tired signs. Many babies follow this pattern in the first three months of life:

- After daytime feeds, your baby will usually be happy. This 'happy-awake-time' is less than 15 minutes in the first few weeks and 60 to 90 minutes by three months.
- When your baby starts to grizzle or cry, it's bedtime.

Other tired signs in babies in the first three months include:

- jerking arms or legs
- yawning
- frowning
- arching back
- staring
- stiffness.

If your baby is older than four months, you might also see them rub their eyes when they're tired.

It is important to learn to read your baby's tired signs and to respond by doing some activities (a warm bath, a story) that help your baby to wind down, and then putting them down to sleep. If your baby is overtired then sleep becomes more difficult.

1. Be alert to your baby's tired signs (overtired babies are very hard to settle).
2. Take your baby into their bedroom.
3. Darken the bedroom (during day and night) and minimise interaction to prepare your baby for sleep.
4. Wrap your baby and/or provide a dummy.
5. Cuddle your baby and put them into the cot/bassinette quiet but still awake.
6. If your baby grizzles or is quiet, you should leave the room. Give your baby the opportunity to settle on their own. Some babies will grizzle themselves to sleep.
7. If your baby starts to cry, stay to settle them in the cot (stroking, gentle patting) until your baby is quiet but not asleep.
8. Leave the room.

You might need to repeat this process several times.

Learn more about your baby's sleep



Centre for Community Child Health

November 2015



Baby sleep cycles

Over the course of one night (or day), your baby will repeatedly cycle from light to deep sleep. In very young babies this cycle of light to deep sleep occurs every 20 or so minutes. In older babies it might take 30 to 50 minutes.

The way your baby goes to sleep at the start of the night (and the start of daytime naps) is the way they will expect to go back to sleep overnight. If the last thing your baby remembers is being rocked or fed to sleep at the start of the night, they are going to want to be rocked or fed back to sleep when they wake overnight!

Sleep cues: parent dependent and independent

Babies rely on different cues to help them go to sleep. Adults do too – perhaps you have a preferred pillow or lie in a certain position to fall asleep?

All babies develop their own set of sleep cues and you play a big role in determining what these will be. **Parent-dependent** cues to get babies to fall asleep include:

- rocking
- walking in a pram
- feeding
- driving around the block in a car.

Babies learn to rely on these cues to fall back to sleep when they wake during the night.

With **parent-independent** sleep cues, you can help your baby learn to fall asleep without your help. If your baby can fall asleep at the start of the night without direct help from you, your baby will be more likely to re-settle during the night without crying, and will only tend to cry out during the night if they are hungry or uncomfortable.

Parent-independent sleep cues can include:

- a dark and quiet room away from the television and other children
- the same sleep place for both day and night whenever possible
- wrapping/swaddling or tucking your baby into their cot in the same way for every sleep
- patting or gently stroking your baby until they're drowsy but not asleep.

If your baby falls asleep with parent-independent sleep cues and wakes between sleep cycles, they will see that everything is in its usual place (darkened room, quiet, still swaddled) and are likely to fall back to sleep without calling out.