



Information Statement

ROOM TEMPERATURE

SIDS AND KIDS DOES NOT RECOMMEND A SPECIFIC ROOM TEMPERATURE FOR HEALTHY BABIES

To Reduce the Risk of Sudden Unexpected Deaths in Infancy (SUDI), including SIDS and Fatal Sleep Accidents

1. Sleep **baby on the back** from birth, not on the tummy or side
2. Sleep baby with **head and face uncovered**
3. Keep baby **smoke free** before birth and after
4. Provide a **safe sleeping environment** night and day
5. Sleep baby in their **own safe sleeping place** in the **same room as an adult care-giver** for the first six to twelve months
6. **Breastfeed** baby if you can

Thermal stress (overheating) has been implicated in Sudden Infant Death Syndrome (SIDS) for many years and avoiding overheating has been one of the strategies to reduce the risk of SIDS.

With the advent and marketing of nursery thermometers and suggested bedding configurations, parents may think they must maintain a specific room temperature in order to reduce the risk of SIDS. In Australia with the absence of very extreme temperatures it is usually not necessary to measure room temperature.

To date, there is no evidence to show that maintaining a specific room temperature prevents sudden infant death and there is no evidence to show that thermal factors are implicated in SIDS as long as:

- The baby is placed to sleep on the back
- The baby is dressed appropriately for the room temperature (not over or under dressed)
- The baby's head and face remain uncovered

Head and Face Covering

Studies show that the risk of SIDS increases when a baby's face becomes covered by bedding e.g. sheets, blankets, quilts & duvets.¹⁻⁴ In 1996, Fleming et al found that babies who died were more heavily wrapped than controls, the risk increasing as the tog value increased. A small but significant proportion of these babies also wore a hat to sleep.

Compared to controls, significantly more babies who died were found at the bottom of the bed, more were found with covers over their heads, and of these, more were sleeping under duvets.³

In 2005, the New South Wales Child Death Review Team reported that almost 60% of babies who died suddenly & expectedly between 2000 -2002 were found with their heads or faces covered at the time of death.⁵

The mechanism responsible for death when the face becomes covered is not entirely clear. Studies suggest that death could be attributed to mechanical occlusion of the airways, rebreathing of expired air or thermal stress (overheating).⁶

Babies regulate their temperature through the head, particularly the face. In a heavily wrapped baby, 85% total heat loss is through the face.⁷ If this normal method of heat loss is restricted by bedding covering the face, wearing a bonnet or tummy sleeping (partial face covering by mattress and/or bedding), there is the propensity for thermal stress to occur.

Tuffnel et al (1995) demonstrated that heat loss in tummy sleeping babies is 60% less effective than for non tummy sleeping babies with the same insulation values for clothing and bedding.⁸ This may explain why researchers found that tummy sleeping in combination with increased body insulation increased the risk of SIDS,⁹⁻¹¹ particularly in rooms where the heating was left on.^{3,11} Hauk et al (2003) found that tummy sleeping in combination with a soft bedding surface increased the risk of SIDS more than 20 times.¹²

It is also known that babies have depressed arousal from sleep when the face is covered, **even for babies sleeping in the back position.**¹³ Arousal from sleep is an important protective response to life-threatening stimuli and failure to arouse from sleep is thought to be a possible mechanism leading to SIDS.¹⁴

Although evidence demonstrates an increased risk of SIDS where there is a combination of tummy sleeping, increased thermal insulation and room heating, there appears to be no association between SIDS and high external environmental temperatures¹⁵ as long as the baby is not over insulated and able to cool down by evaporation of sweat. Sweating is one of the most important defences against overheating and the combination of sweating with red skin may be indicative of overheating.¹⁶

Bedding for babies that have a cold

Research has shown that babies with symptoms of a common cold are often given more bedding than they need due to carer concerns that babies showing signs of a cold need to be kept very warm.¹⁷ In fact, providing assistance to babies with a common cold to effectively regulate their temperature is very important. This can be best achieved by placing them on the back to sleep with the head uncovered and removing some bedding or clothing if baby is overly warm to touch, sweating or red in the face.

Conclusion

There is strong evidence to show that tummy sleeping significantly increases the risk of SIDS, particularly when the head or face becomes covered. Likewise there is good evidence to show that the risk also increases for babies who sleep on the back if their

head or face becomes covered. However, there is no evidence to show that extra thermal insulation increases the risk of SIDS in babies who sleep on the back with the head and face uncovered.¹⁰ There is also no evidence to support maintaining a specific room temperature or any specific bedding configurations (number of blankets required) as this depends on a number of factors such as what the baby is wearing, whether it is summer or winter and whether there is heating or cooling.

Summary & Recommendations

- Babies control their temperature predominantly through the face. Sleeping baby on the back with the head and face uncovered is the best way to protect baby from overheating
- It is not necessary to monitor the room temperature or to leave the heating or cooling on all night as long as the baby is dressed appropriately for the room temperature
- Dress baby as you would dress yourself – comfortably warm, not hot or cold
- A good way to check baby's temperature is to feel baby's chest, which should feel warm (don't worry if baby's hands and feet feel cool, this is normal). If baby is sweating or has a red face, remove some bedding or clothing. This may be necessary if baby is unwell, in which case you should seek medical attention
- Ensure that baby's head and face cannot become covered - remove bedding such as duvets, pillows, bumpers, lambs wool, soft toys etc
- A good way to avoid face covering is to use a baby sleeping bag (one with fitted neck, armholes or sleeves and no hood)
- If using bedclothes rather than a sleeping bag, it is the best to use layers of lightweight blankets that can be added or removed easily according to the room temperature and which can be tucked underneath the mattress
- Remove baby's bonnet as soon as you go indoors or enter a warm car, bus or train, even if it means waking the baby
- Never use electric blankets, wheat bags or hot water bottles for babies

The SIDS and Kids Safe Sleeping program is based on scientific evidence and was developed by Australian SUDI researchers, paediatricians, pathologists, and child health experts with input from overseas experts in the field.

For further information visit the SIDS and Kids website at www.sidsandkids.org or phone SIDS and Kids in your State or Territory on 1300 308 307.

References

1. L'Hoir MP, Engelberts AC, van Well GT, McClelland S, Westers P, Dandachli T, Mellenbergh GJ, Wolters WH, Huber J. (1998) Risk and preventive factors for cot death in The Netherlands, a low incidence country. *European Journal of Pediatrics*. 157(8): 681-688.
2. Ponsonby AL, Dwyer T, Couper D, Cochrane J. (1998) Association between use of a quilt and sudden infant death syndrome: case-control study. *British Medical Journal*. 316(7126): 195-196.
3. Fleming PJ, Blair PS, Bacon C, Bensley D, Smith I, Taylor E, Berry J, Golding J, Tripp J. (1996) Environment of infants during sleep and risk of the sudden infant death syndrome: results of 1993-95 case-control study for confidential inquiry into stillbirths and deaths in infancy. *British Medical Journal*. 313(7051): 191-195.
4. Kleeman WJ, Schlaud M, Fieguth A, Hiller AS, Roghämél T, Tröge HD. (1999) Body and head position, covering of the head by bedding and risk of sudden infant death (SID). *International Journal of Legal Medicine*. 112(1): 22-26.
5. New South Wales Child Death Review Team (2005) *Sudden Unexpected Deaths in Infancy: The New South Wales Experience*. Report written for the NSW Child Death Review Team by the Commission for Children and Young People (Malins P, Burke S, Freeman K, Lawrence R, Blatch C, Irvine P & Sankey M) Sydney: NSW Commission for Children and Young People. Available http://www.kids.nsw.gov.au/uploads/documents/sudi_section1.pdf and http://www.kids.nsw.gov.au/uploads/documents/sudi_section2.pdf
6. Kemp JS, Kowalski RM, Burch PM, Graham MA, Thach BT. (1993) Unintentional suffocation by rebreathing: a death scene and physiological investigation of a possible cause of sudden infant death. *The Journal of Pediatrics* 122(6): 874-880
7. Wailoo MP, Petersen SA, Whittaker H, Goodenough P.. (1989) The thermal environment in which 3-4 month old infants sleep at home.. *Arch Dis Child*. 64(4): 600-4.
8. Tuffnell CS, Petersen SA, Wailoo MP. (1995) Prone sleeping infants have a reduced ability to lose heat. *Early Human Development*. 43(2): 109-116.
9. Fleming PJ, Gilbert R, Azaz Y, Berry PJ, Rudd PT, Stewart A, Hall E. (1990) Interaction between bedding and sleeping position in the sudden infant death syndrome: a population based case-control study. *British Medical Journal*. 301(6743): 858-859.
10. Williams SM, Taylor BJ, Mitchell EA. (1996) Sudden infant death syndrome: Insulation from bedding and clothing and its effect modifiers. *International Journal of Epidemiology*. 25(2): 366-375.
11. Ponsonby AL, Dwyer T, Gibbons LE, Cochrane JA, Wang YG. (1993) Factors potentiating the risk of sudden infant death syndrome associated with the prone position. *New England Journal of Medicine*. 329(6): 377-82.
12. Hauck FR, Herman SM, Donovan M, Iyasu S, Moore CM, Donoghue E, Kirschner RH, Willinger M. (2003) Sleep environment and the risk of sudden infant death syndrome in an urban population: The Chicago Infant Mortality Study. *Pediatrics* 111(5 Part 2): 1207-1214.
13. Franco.P, Lipshutz W, Valente F, Adams S, Scaillet S, Kahn A. (2002) Decreased arousals in infants who sleep with the face covered by bedclothes. *Pediatrics* 109(6): 1112-1117.
14. Read PA, Horne RS, Crange SM, Walker AM, Walker DW, Adamson TM. (1998) Dynamic changes in arousal threshold during sleep in the human infant. *Pediatric Research*. 43(5): 697-703.
15. Scheers-Masters JR, Schootman M, Thach BT. (2004) Heat stress and sudden infant death syndrome incidence: A United States population epidemiologic study. *Pediatrics* 113(6): 586-592.
16. Grover G, Berkowitz C D, Lewis RJ, Thompson M, Berry L, Seidel J. (1994) The effects of bundling on infant temperature. *Pediatrics* 94(5): 669-67.
17. Rognum TO. (2001) Definition and pathologic features. In: Roger W Byard & Henry F Krous (Eds). *Sudden infant death syndrome : Problems, progress & possibilities*. (pp 4-30). London: Arnold.

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