



Public Health Association of Australia:

Policy-at-a-glance – Sudden Unexpected Death in Infancy (SUDI) and Sudden Infant Death Syndrome (SIDS) Policy

Key message: PHAA recommends -

1. The Commonwealth Department of Health and Ageing should support and expand education programs aimed to educate health professionals and the public to raise awareness of the five key risk reduction strategies identified in this policy. The impact and outcome of these programs should be monitored Australia-wide;
2. Aboriginal and Torres Strait Islander communities may require their own specifically targeted information programs to be developed and implemented in association with local regional primary health services; and
3. The National Health and Medical Research Council (NHMRC), SIDS and Kids and other research funding bodies should support additional research to develop an understanding of the biological mechanisms responsible for the relationship between prone sleeping position and SIDS, in addition to other risk factors.

Summary: Implementation of the following five strategies is vital to the reduction of risk for both SUDI and SIDS: sleeping baby on the back from birth; sleeping baby with face uncovered; avoiding exposing babies to tobacco smoke, before birth and after; sleeping baby in a safe cot, with a safe mattress and in a safe sleeping place; and sleeping baby in their own safe sleeping environment next to the parent's bed for the first six to twelve months of life. This policy seeks to outline a series of principles and actions designed to achieve these goals.

Audience: Australian, State and Territory Government Health Ministers; NHMRC; policy makers and program managers.

Responsibility: PHAA's Child Health Special Interest Group (SIG)

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SUDDEN UNEXPECTED DEATH IN INFANCY (SUDI) AND SUDDEN INFANT DEATH SYNDROME (SIDS) POLICY

Sudden Unexpected Death in Infancy (SUDI) is the sudden, unexpected death of an infant, usually occurring during sleep, in which a cause of death is not immediately obvious. SUDI refers to a broad category of sudden and unexpected deaths which include Sudden Infant Death Syndrome (SIDS), infections or anatomical or developmental abnormalities not recognised before death, sleep accidents due to unsafe sleep environments and sudden unexpected deaths that are revealed by investigations to have been the result of non-accidental injuries (QLD Health 2008).

A death is generally classified as a SUDI if it concerns:

- an infant less than 12 months of age
- a death that was sudden in nature
- a death that was unexpected (QLD Health 2008).

SIDS is a subset of SUDI. SIDS is defined as:

The sudden and unexpected death of an infant under 1 year of age, with onset of lethal episode apparently occurring during sleep, that remains unexplained after a thorough investigation including performance of a complete autopsy, and review of the circumstances of death and the clinical history (July 2004).

This definition was a result of a pathology workshop in Victoria, which was attended by coroners and pathologists from all over Australia. Pathology has advanced to the point where the cause of death in a baby over one year of age is likely to be detectable, therefore a diagnosis of SIDS would not be appropriate.

Most SUDI deaths occur as a result of either SIDS or a fatal sleep accident. Epidemiological investigations have shown that many of the maternal, infant and socio-demographic risk factors for SIDS are common to SUDI and fatal sleep accidents, therefore safe sleeping strategies will target all three of these causes of infant death (QLD Health 2008).

The Public Health Association of Australia notes that:

1. SIDS is a major cause of death in Australia in infants aged between 1 and 12 months. The prevention of as many premature deaths as possible is a major public health objective.

2. SIDS has been reduced to low levels in Australia, however, further health gains are possible, particularly for Indigenous Australians, through a reduction in exposure to modifiable risk factors (AIHW, 2008).
3. The specific cause/s of SIDS are not yet fully understood but risk factors have been identified. Some of these risk factors cannot be modified whilst others can be modified. There is strong evidence that infants who sleep in the prone position (on their abdomens) or their sides have a significantly increased risk of SIDS in comparison to babies sleeping in the supine (back) position. Healthy babies should be put to sleep on the back from birth. Some babies may need to sleep prone for medical reasons.
4. At least 19 retrospective case-control studies demonstrated a higher risk of SIDS when infants slept prone, with odds ratios ranging from 1.2 to 14.1 (reviewed by Beal and Finch 1991, Dwyer and Ponsonby 1996). Overall the studies showed a threefold or greater increased risk of SIDS when babies slept prone.
5. Research also suggests that there is a smaller but significantly increased risk of SIDS when infants are placed on their sides rather than their backs to sleep. Three published studies show a significantly higher risk for side sleeping with the Univariate Odds Ratio (UOR) approximately 1.8 (Mitchell et al. 1992, Fleming et al. 1996, Mitchell et al. 1997). Fleming et al. (1996) suggest that the primary reason for the increased risk of SIDS in the side sleeping position is the greater possibility of an infant rolling into the prone position during sleep.
6. There is strong scientific evidence to support the back sleeping position as the safest sleeping position for infants. Placing baby to sleep in the prone position increases the risk of SIDS by approximately nine times and placing baby on the side doubles the risk (SIDS and Kids, 2009).
7. In Australia, infant deaths attributed to SIDS have fallen approximately 83 per cent during the last 20 years. (QLD Health 2008). However, there has not been a similar reduction in the rate of SIDS among Aboriginal and Torres Strait Islander infants (Freemantle et al. 2004). This rate reduction has occurred in conjunction with public health intervention to promote back sleeping for healthy infants, in addition to recommendations that babies sleep with the head and the face uncovered and that babies are exposed to an environment that is free from cigarette smoke during pregnancy and after birth. Since risk reduction campaigns began, an estimated 4,084 lives have been saved in Australia. The SIDS rate has fallen in all States of Australia and for the ACT, but the rate remains significantly high in the Northern Territory and amongst Aboriginal and Torres Strait Islander communities.
8. According to Australian Bureau of Statistics (ABS) analysis for the period 1991-2000:
 - Male infants are one and a half times more likely to die from SIDS than females;
 - The most at risk age groups are infants aged one to three months;
 - The most at risk months are August, May and June;
 - The most at risk days of the week are Saturday and Friday;
 - The Northern Territory (2.07 deaths per 1,000 births) has the highest SIDS death rate in Australia while Victoria (0.62) has the lowest;
 - Infants living outside capital cities are one and a half times more likely to die of SIDS than their metropolitan counterparts; and
 - Infants of Aboriginal and Torres Strait Islander origin are six times more likely to die of SIDS than non-Indigenous infants (ABS 2003).

9. Prone sleeping position is an important risk factor for SIDS. The major contributing factor to the recent SIDS rate decline in Australia has been the reduction in the proportion of infants usually sleeping prone. An outcome evaluation in Tasmania found that 70% of the SIDS rate reduction in an infant birth cohort could be accounted for by the decreased prevalence of the prone sleeping position.
10. There is also an increased risk of SIDS if a baby's head becomes covered during sleep (Blair et al 2008, Mitchell et al 2008). Several case studies have reported that a proportion of deaths attributed to SIDS involved infants found with their faces obstructed by bedding. Between 1987 and 1993, 22 percent (n = 44) of the total number of babies who died due to SIDS (203) in South Australia were found with their heads underneath or intertwined in bed clothes (Beal and Byard 1995). In a New Zealand case-control study from 1987-1990, 16 percent (60/375) of cases were found deceased with the head covered (Wilson et al. 1994).
11. Fleming et al. (1996) conducted a case-control study in the United Kingdom on families with infants born from 1993 to 1995. The findings indicated that 19 percent (34/182) of cases were found with covers over the head following the last sleep in comparison to two percent (18/765) of controls (Unadjusted Odds Ratio – UOR 18.9 (8.05, 44.48)). The magnitude of the association between infants found with covers over the head and SIDS increased after the adjustment for variables such as the sleeping environment, sleep position and infant exposure to tobacco smoke (Adjusted Odds Ratio (AOR) 21.58 (6.21, 74.99)). Duvet or quilt use was more common among cases, 42 percent (82/194), than controls, 23 percent (177/779) (UOR 2.82 (1.95, 4.08)). Adjustments made for covers over the head and other sleeping environmental factors accounted for part of the association (AOR 1.88 (1.14, 3.12)), and the researchers concluded that duvets or quilts were linked with additional risks both in themselves and through their propensity to total covering. The 1993 to 1995 study is important because it reports findings from a population after intervention to reduce the prevalence of prone sleeping. As a result, the majority of healthy infants were sleeping on their backs (Fleming et al. 1996).
12. Wilson et al. (1994) conducted a New Zealand case-control study from 1987 to 1990, and found that more case infants, 74 percent (n = 286), than control infants, 62 percent (n = 969), were able to move freely in their sleep environment. The protective association between firm tucking and SIDS increased after adjustment for possible confounders including prone position and maternal smoking during pregnancy (AOR 0.63 (0.46, 0.86)). Duvet or quilt use was more common among cases than controls (UOR 1.65 (1.31, 2.06)) but this association did not persist after adjustment for a large number of potential confounders (AOR 1.07 (0.80, 1.43)).
13. Physiological studies indicate that facial obstruction by soft bedding may lead to complete airway obstruction and/or hyperthermia (Galland et al. 1994) and/or accidental suffocation by rebreathing (Kemp et al. 1993).
14. In 1993, a recommendation that duvets or quilts should not be used for infants under one year of age was made in the United Kingdom (Report of the Chief Medical Officers' Expert Group on the sleeping position of infants and cot death 1993). In 1994, the American Academy of Paediatrics recommended that soft surfaces and gas-trapping objects (such as thick cot bumpers) be avoided in an infant's sleeping environment (Katwinkel et al. 1994).
15. Research also indicates that the risk of SIDS is increased if a baby is exposed to cigarette smoke during pregnancy and after birth. Some evidence suggests that if a woman experiences

passive smoking during pregnancy due to a partner's smoking, the risk of SIDS is also increased. If a pregnant woman and her partner both smoke, the risk is doubled.

16. The risk of sudden infant death, including SIDS associated with smoking, has been demonstrated in more than 60 studies, and the evidence meets criteria needed to demonstrate a causal relationship (Mitchell 2007; Vennemann et al. 2007). This finding is consistent over time and place. Many studies have reported a dose-response relationship.
17. Blair et al. (1996) conducted a case-control study in the UK on families with infants born between 1993 and 1995, after the change in sleeping position to the back was promoted. The investigation found that the incidence of smoking during pregnancy was greater in mothers of 195 SIDS cases (63 percent) than in mothers of 780 controls (25 percent) (AOR 2.1 (1.24, 3.54)). If fathers were smokers there was an independent additive increase in the risk of SIDS (AOR 2.5 (1.48, 4.22)).
18. If parents or caregivers smoked in the house after birth, there was an independent additive increased risk of SIDS (AOR 2.93 (1.56, 5.48)). The population attributable risk from smoking of 61 percent is higher than the 33 percent that was reported for smoking prior to the reduction of prone sleeping (Mitchell 1995).
19. Infants of Aboriginal and Torres Strait Islander descent are at an increased risk of SIDS with figures from the period 2006-07 indicating that these infants died suddenly and unexpectedly at a rate 4.8 times higher than non-Indigenous infants (QLD Health 2008).
20. In addition to the above-mentioned risk factors, babies of mothers under 20 years old have been shown to be at higher risk. Also at higher risk are babies of mothers who have poor or delayed prenatal care, misuse alcohol or other drugs or suffer from depression. Socioeconomic disadvantage is associated with higher risk of SIDS and infants who are not immunised also experience an increased risk of SIDS – evidence indicates that immunisation halves the risk (QLD Health 2008).

The Public Health Association of Australia affirms that:

21. Implementation of the following five strategies is vital to the reduction of risk for both SUDI and SIDS:
 - Sleeping baby on the back from birth, not in the prone position or on the side;
 - Sleeping baby with face uncovered (no doonas, pillows, lamb's wool, bumpers or soft toys);
 - Avoiding exposing babies to tobacco smoke, before birth and after;
 - Sleeping baby in a safe cot, with a safe mattress and in a safe sleeping place; and
 - Sleeping baby in their own safe sleeping environment next to the parent's bed for the first six to twelve months of life (SIDS and Kids, 2009).

The Public Health Association of Australia believes that:

22. The Commonwealth Department of Health and Ageing should support and expand education programs aimed to educate health professionals and the public to raise awareness of the five key risk reduction strategies outlined above under point 21. The impact and outcome of these

programs should be monitored Australia-wide, particularly amongst Aboriginal and Torres Strait Islander communities where rates of SIDS are significantly high, and funds should be made available for this evaluation. Aboriginal and Torres Strait Islander communities may require their own specifically targeted information programs to be developed and implemented in association with local regional primary health services.

23. The National Health and Medical Research Council (NHMRC), SIDS and Kids and other research funding bodies should support additional research to develop an understanding of the biological mechanisms responsible for the relationship between prone sleeping position and SIDS, in addition to other risk factors, such as head coverings and exposure to cigarette smoke. Epidemiological research into SIDS is an essential basis for public health policy and PHAA recommends that this research be regarded as a priority and be funded adequately.

The Public Health Association of Australia resolves that:

24. The PHAA National Office, Board and Child Health Special Interest Group will advocate for the Australian Government Minister for Health and Ageing and the Chief Executive Officer of the NHMRC to provide financial support for the above actions.
25. PHAA Branches will write to State Health Ministers drawing attention to this policy and urging support for both professional and public education and for the necessary ongoing research at the jurisdictional level.

References:

1. Australian Bureau of Statistics (2003) "SIDS in Australia 1981-2000 A Statistical Overview" An information paper produced by the ABS on behalf of SIDS and Kids, August 2003 (accessed on 9 June 2009) at: <http://www.sidsandkids.org/statsindex.html>
2. Australian Institute of Health and Welfare (2008) "Key national indicators of children's health, development and wellbeing" AIHW Bulletin 58, April 2008 pp 1-11
3. Beal, S.M. and Byard, R.W. (1995) "Accidental death or sudden infant death syndrome?" In J. Paediatr. Child Health, 31, pp. 269-271.
4. Beal, S.M. and Finch, C.F (1991) "An overview of retrospective case-control studies investigating the relationship between prone sleeping position and SIDS". In J. Paediatr. Child Health, 27, pp. 334-339.
5. Blair, P.S., Fleming, P.J., Bensley, D. Smith, I. Bacon, C. Taylor, E. Berry, J. Golding, J. and Tripp, J. (1996) "Smoking and the sudden infant death syndrome: results from 1993-5 case-control study for confidential inquiry into stillbirths and deaths in infancy". In BMJ, 313, pp. 195-198.
6. Blair, PS, Mitchell, EA, Heckstall-Smith, EM & Fleming, PJ. (2008), 'Head covering - a major modifiable risk factor for sudden infant death syndrome: a systematic review', Archives of Disease in Childhood, vol. 93, no. 9, pp. 778-83.
7. Dwyer T, Ponsonby AL, Blizzard L, Newman NM, Cochrane JA. The Contribution of Changes in the Prevalence of Prone Sleeping Position to the Decline in Sudden Infant Death Syndrome in Tasmania JAMA 1995; 273/10:783-89.
8. Dwyer, T. and Ponsonby, A.-L. (1996) "The decline in SIDS: a success story for epidemiology" In Epidemiology, 7, pp. 323-325.
9. Englebarts AC, de Jonge GA. Choice of Sleeping positions for Infants: possible Association with Cot Death. Arch Dis Child 1990; 65: 462-67.
10. Fleming, P.J. Blair, P.S. Bacon, C. Bensley, D. Smith, I. Taylor, E. Berry, J. Golding, J. Tripp, J. (1996) "Environment of infants during sleep and the risk of the sudden infant death syndrome: results of the 1993-5 case control study for confidential inquiry into stillbirths and deaths in infancy" In BMJ, 313, pp. 191-195.
11. Freemantle CJ, Stanley, F.J., Read, A.W., de Klerk, N.H. The First Research Report: patterns and trends in mortality of Western Australian infants, children and young people 1980-2002. Perth: The Department for Community Development, Government of Western Australia; 2004 December.

12. Galland, B.C. Peebles, C.M. Bolton, D.P. and Taylor, B.J. (1994) "The micro-environment of the sleeping newborn piglet covered by bedclothes: gas exchange and temperature". In *J. Paediatr. Child Health*, 30, pp. 144-150.
13. Golding, J. (1997) "Sudden infant death syndrome and parental smoking: a literature review". In *Paediatr. Perinatal Epidemiol.* 11, pp. 67-77.
14. Katwinkel, J. Brooks, J. Keenan, M.E. Malloy, M. (1994) "Infant Sleep Position and Sudden Infant Death Syndrome (SIDS) in the United States: joint commentary from the American Academy of Paediatrics and selected agencies of the federal government". In *Paediatrics*, 93, p. 820.
15. Kemp, J.S., Kowalski, R.M. Burch, P.M. Graham, M.A. and Thach, B.T. (1993) "Unintentional suffocation by rebreathing: a death scene and physiological investigation of a possible cause of sudden infant death". In *J. Paediatr.* 122, pp. 874-880.
16. Mitchell, E.A. Taylor, B.J. Ford, R.P.K. Stewart, A.W. Becroft, D.M.O. Thompson, J.M.D. Scragg, R. Hassal, I.B. Barry, D.M.J. Allen, E.M and Roberts, A.P. "Four modifiable and other major risk factors for cot death: The New Zealand Study". In *J. Paediatr. Child Health*, 28, suppl. 1, pp. S3-S8.
17. Mitchell, EA, Thompson, JM, Becroft, DM, Bajanowski, T, Brinkmann, B, Happe, A, Jorch, G, Blair, PS, Sauerland, C & Vennemann, MM. (2008) 'Head covering and the risk for SIDS: findings from the New Zealand and German SIDS case-control studies', *Pediatrics*, vol. 121, no. 6, pp. e1478-83.
18. Mitchell, E.A. (1995) "Smoking: the next major and modifiable risk factor". In Rognum, T.O. (ed) *Sudden infant death syndrome: new trends for the nineties*, Scandinavian University press: Oslo, 1995a, Ch. 2, pp. 114-119.
19. Queensland Health 2008 "Safe Infant Care to Reduce the Risk of Sudden Unexpected Deaths in Infancy: Policy Statement and Guidelines". Queensland Government, November 2008.
20. SIDS and Kids (2009) "Media Information Statement: Theories about the causes of SIDS", March 2009 (accessed on 9 June 2009) at: <http://www.sidsandkids.org/documents/SIDStheoriesmediainformationstatement31032009.pdf>
21. Wilson, C.A. Taylor, B.J. Liang, R.M. Williams, S.M. and Mitchell, E.A. (1994) "Clothing and bedding and its relevance to sudden infant death syndrome: further results from the New Zealand Cot Death Study" In *J. Paediatr. Child Health*, 30, pp. 506-512.

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