



PUBLIC HEALTH ASSOCIATION
of Australia Inc

SUDDEN INFANT DEATH SYNDROME (SIDS)

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.

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. 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 do sleep on their stomachs or their sides have a significantly increased risk of SIDS in comparison to babies sleeping in the supine (back) position. Healthy babies should sleep on the back from birth. Some babies may need to sleep on their stomachs for medical reasons.

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.

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.

3. According to the Australian Bureau of Statistics, the rate of SIDS in Australia has decreased from 1.97 deaths per 1,000 live births in 1989 to 0.29 deaths per

1,000 live births in 2003. Overall, there has been an 84 percent decrease in the rate of SIDS from 1990 to 2003 when considering the general population. However, there has not been a similar reduction in the rate of SIDS among Aboriginal and Torres Strait Islander infants¹. 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.

The Public Health Association of Australia affirms that:

5. 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.
6. There is also an increased risk of SIDS if a baby's head becomes uncovered during sleep. 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).

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 (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).

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)).

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).

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).

7. 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.

An increased risk of SIDS when babies are exposed to cigarette smoke has been found in over 30 case-control and cohort studies (Mitchell 1995, Golding 1997). This finding is consistent over time and place. Many studies have reported a dose-response relationship.

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)).

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).

The Public Health Association of Australia believes that:

8. The Commonwealth Department of Human Services and Health should support and expand education programs aimed to educate health professionals and the public of the risks associated with the prone sleeping position, head coverings during sleep and exposure to cigarette smoke. 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.

9. 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 PHA recommends that this research be regarded as a priority and be funded adequately.

The Public Health Association of Australia resolves that:

10. The Executive Committee will encourage the Commonwealth Minister for Human Services and Health, Housing and the Chairman of NHMRC to provide financial support for the above actions.
11. The Executive Committee will encourage relevant private foundations for such support.
12. Branches should write to State parliamentarians urging support for both professional and public education and for the necessary ongoing research.

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ADOPTED 1991

First adopted at the 1991 Annual General Meeting of the Public Health Association of Australia and amended at the 1995 Annual General Meeting and revised at the 2005 Annual General Meeting of the PHAA in Perth.