# information statement



## using a dummy or pacifier

For the purpose of this information statement the colloquial term 'dummy' is used to include pacifiers, dummies and soothers that are inserted into an infant or child's mouth for the purpose of settling or soothing.

## summary of evidence

- There is strong evidence that dummies are associated with a reduced risk of sudden infant death when used consistently.
- Mechanisms that provide this protection are not understood and pacifier use may possibly be a marker from something else, as yet not identified.
- Dummy use is associated with advantages including a reduced risk of sudden infant death, and effective infant settling
- Dummy use is associated with disadvantages including a potential negative impact on breastfeeding, and a higher incidence of respiratory, ear and gastrointestinal infections, accidents and dental malocclusion.
- In some countries, dummy use is promoted as a SIDS risk reduction strategy
- In other countries dummy use is not actively discouraged, but is not advocated as a risk reduction strategy.



The Red Nose 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. The 80% drop in SIDS deaths and the more than 9,000 lives that have been saved is testament to the effectiveness of the program.

## recommendations for dummy use "

- If parents choose to use a dummy, it is important that they receive evidence based advice, including the advantages and disadvantages of dummy use<sup>1,3-4</sup>
- Breastfeeding mothers are advised to offer a dummy only when breastfeeding has been established, usually after the first 4 to 6 weeks<sup>14</sup>.
- Dummies can be offered to bottle-fed infants from birth<sup>1,3-4</sup>.
- If being used, dummies should be offered for all sleep periods<sup>1</sup>.

- Parents who wish to use a dummy should do so only for sleeping periods and by the end of the first year of life dummy use should be phased out <sup>3-5</sup>
- If the baby refuses the dummy, parents are advised not to force the child to use a dummy<sup>7</sup>
- If the dummy falls out of the mouth during sleep, do not to reinsert it<sup>14,7</sup>
- Dummies should not be coated in anything sweet<sup>3-4</sup>
- Dummies should be cleaned often and replaced regularly<sup>6</sup>

- Infants and children with chronic or recurrent otitis media should be restricted in their use of a dummy<sup>5,8</sup>.
- Dummies should definitely be discontinued by 2-4 years to reduce the risk of dental malocclusion<sup>6</sup>
- Parents may need to be supported with strategies to wean infants and toddlers from dummy use, including activities, rewards, toys, and other objects of affection<sup>6</sup>

## evidence

#### introduction

Dummies or 'pacifiers' have been used to settle infants for centuries. In 1979, Cozzi and colleague<sup>9</sup> postulated that dummies may protect against Sudden Infant Death Syndrome (SIDS). Evidence to support this hypothesis was first reported by Mitchell and colleagues in 1993<sup>10</sup>.

#### Association between dummy use and sudden infant death

Numerous case-control studies have since been conducted which have allowed the relationship between dummy use and sudden infant death to be investigated<sup>11-17</sup>. Physiological and observational studies have also examined possible mechanisms for how dummies may provide this protective effect<sup>18-21</sup>.

Meta-analyses of available studies<sup>7,22</sup> have consistently reported a reduced risk of sudden infant death (including SIDS) associated with dummy use. Hauck and colleagues conducted a meta-analysis of seven case-control studies and reported a 61% reduction of SIDS among dummy users compared to a control group, using the last sleep as the reference sleep, based on multivariate odds ratios (OR=0.39, 95% CI: 0.31-0.50). The authors concluded that dummies should be recommended as a potential risk reduction strategy<sup>22</sup>.

A subsequent meta-analysis, using essentially the same studies as Hauck et al (2005)<sup>22</sup>, found a 52% reduction in SIDS among dummy users; however reached different conclusions and recommendations for practice<sup>7</sup>. These authors suggested that recommending dummies as a risk reduction strategy was open to debate, highlighting the lack of understanding of a causal mechanism. The authors suggested that dummy use may be a marker for a yet unmeasured variable, and questioned the potential negative impact of dummies on breastfeeding<sup>7</sup>. Callaghan and colleagues in a systematic review examining dummy use on SIDS, breastfeeding and dental malocclusion, drew similar conclusions<sup>23</sup> finding that dummies were associated with a reduced risk of SIDS, but may negatively impact breastfeeding. These authors<sup>23</sup>, and others<sup>24</sup>, have advocated that dummies should not be actively promoted as a SIDS risk reduction strategy, however should not be discouraged if parents choose to use them.

Findings from subsequent case-control studies<sup>25-27</sup> supported a reduced risk of sudden infant death with dummy use, while a case-control study examining infant care practices in high risk populations did not find a significant relationship between sudden infant death and dummy use <sup>28</sup>.

Further analysis of data<sup>29</sup> from the Chicago study (conducted between 1993-1996) suggested that dummy use reduced the risk of SIDS more when mothers were aged  $\geq$  20 years, married, non-smokers, had adequate prenatal care and if the baby was ever breastfed. Dummy use also reduced SIDS risk more when the infant was sleeping in the prone/side position, bedsharing, or when soft bedding was present. The authors concluded that dummy use may provide an additional strategy to reduce the risk of SIDS for infants at high risk or in adverse sleep environments<sup>1,29</sup>.

#### Additional advantages of dummy use

Non-nutritive sucking using sucrose and dummies have been shown to help reduce infant responses to painful procedures, as measured by a reduction in crying<sup>30-31</sup>. Studies in preterm infants have also shown that non-nutritive sucking using dummies has been associated with a reduced length of hospital stay for preterm infants <sup>32-33</sup>.

#### **Potential Causal Mechanisms**

The mechanism by which dummies might reduce the risk of SIDS, or by their absence increase the risk, is not fully understood. Several mechanisms have been suggested<sup>7</sup>.

These proposed mechanisms include avoidance of the prone sleeping position<sup>22,29</sup>, protection of the oropharyngeal airway as sucking on a dummy keeps the tongue forward maintaining upper airway patency<sup>8,34</sup>, reduction of gastro-oesophageal reflux through non-nutrient sucking<sup>10</sup>, and lowering the arousal threshold<sup>19</sup>. An infant who is soothed by a dummy may not move as often during sleep, thus limiting the chance of becoming covered by blankets<sup>8</sup>. It has also been suggested that the bulky handle of the dummy may prevent accidental hypoxia as a result of an infant's face being buried in soft bedding<sup>27</sup>. Sucking on a dummy may also enhance development of neural pathways that control patency of the upper airway<sup>27,35</sup>.

Dummies usually fall out within the first 30 minutes of sleep. The beneficial effect might not be a result of the presence of a dummy at a specific time, which may also help to explain the apparent protective effect of usual dummy use versus the presence or not of a dummy on the night the infant died. Dummy use may also be a marker for some protective factors that have eluded measurement<sup>7</sup>.

An Irish study reported that infants are at increased risk for SIDS if they habitually used a dummy but did not use it for the last sleep<sup>15</sup>, and the British CESDI study reported a similar finding, but in multivariate analysis the association did not reach statistical significance<sup>11</sup>. This study also suggested that thumb sucking behaviours may be protective<sup>11</sup>. These findings imply one of several possibilities: that dummies have to be used consistently for all sleep periods; or that the absence of a dummy is a marker for an as yet unmeasured disruption in routine.

Recent studies have also shown that in countries which have shown a reduction in prevalence of dummy use, rates of sudden infant death have also decreased<sup>28</sup>. This finding suggests that the decreased incidence of SIDS cannot be attributed to dummy use alone.



#### Potential Disadvantages of Dummy Use

The potential disadvantages of using dummies or pacifiers must also be considered. Given the many benefits of breastfeeding an issue of consideration is that dummy use may negatively impact the establishment, frequency and duration of breastfeeding. Several studies have demonstrated a significant relationship between frequent and continuous dummy use and reduction in breastfeeding<sup>23,36-37</sup>, although it is unclear whether the relationship is causal or if dummy use is a marker for reduced motivation to breastfeed<sup>7,23</sup>.

A Cochrane review, comparing dummy use versus no dummy use in healthy full-term newborns who had initiated breastfeeding, found no significant effects of dummy use at three months and at four months of age<sup>38</sup>. This review

was limited to studies involving healthy, term newborns who had established breastfeeding; the authors concluded that there was insufficient evidence to assess short-term breastfeeding difficulties faced by mothers and the long-term effect of dummies on infants' health<sup>38</sup>.

A recent systematic review of 29 studies also examined the association between dummies and breastfeeding. These studies included 4 randomised controlled trials [RCTs], 20 cohort studies, and 5 cross-sectional studies<sup>39</sup>. None of the RCTs found a significant difference in breastfeeding outcomes with the dummy/dummy-related intervention, while all of the observational studies reported either a significantly shortened duration or exclusivity of breastfeeding with dummy use [n=17 studies], or a trend in the same direction [n=8 studies]. Whilst RCTs are generally considered as providing stronger evidence of causality, an acknowledged limitation of this review was that randomisation of mothers to dummy use or non-use may not be truly representative of the behaviours and motivations typically seen in mothers who would make this decision on their own<sup>39</sup>. A further review, that included several RCTs, recommended that as dummy use may be associated with early weaning from the breast or may be a marker of breastfeeding difficulties, it should be avoided until breastfeeding is well established<sup>6</sup>.

Few studies have examined the effect of thumb or digit sucking on breastfeeding outcomes. Aarts and colleagues [1999]<sup>40</sup> conducted a prospective, longitudinal study of 506 mother infant pairs, examining thumb sucking and dummy use on breastfeeding patterns in exclusively breastfed infants. Dummy use was associated with fewer feeds and shorter suckling duration per 24 hours, shorter duration of exclusive breastfeeding, and shorter total breastfeeding duration compared with no dummy use. These associations were not found for thumb sucking.

Dummy use has also been associated with a significantly higher risk of infections including otitis media<sup>41-44</sup>, wheezing, earache, diarrhoea/gastroenteritis<sup>735,45</sup>, and oral yeast infection<sup>46</sup>. The American Academy of Pediatrics strongly recommends weaning children from dummies in the second six months of life to prevent otitis media<sup>7</sup>. Infants and children with chronic or recurrent otitis media should be restricted in their use of a dummy<sup>8</sup>.

Other potential disadvantages include accidents (airway obstruction)<sup>47</sup>, strangulation by the cord and eye injuries, and dental malocclusion<sup>723,48</sup>.

A meta-analysis examining dummy use and malocclusion concluded that a longer duration of dummy use was associated with increased incidence of malocclusion<sup>49</sup>. This review found adverse dental effects can be evident after two years of age, with the most significant malocclusions experienced by children who continued dummy sucking habits beyond 48 months of age.



#### **Current Recommendations**

Debate continues over dummy use as a strategy to reduce the risk of sudden infant death. Following a review of the evidence, the International Society for the Study and Prevention of Infant Death was unable to provide a definitive recommendation regarding the use of dummies as a specific SIDS risk reduction strategy<sup>1-2</sup>. Differences in recommendations made by different countries, agencies and researchers were acknowledged.

Some countries, such as the United States and the Netherlands<sup>3-4, 22</sup> have actively encouraged dummy use as a SIDS risk reduction strategy while others, including Australia and New Zealand, have followed a more conservative approach<sup>50</sup>. This approach advocates that while it is appropriate to not actively discourage the use of dummies, in consideration of the significant disadvantages of dummy use, there is insufficient evidence to actively encourage dummy use as a risk reduction strategy<sup>1-2,7,23</sup> at the present time.

There is however international consensus that dummy use is associated with several advantages and disadvantages that should be considered by parents in order for them to make informed choices about the use of dummies for their own infants<sup>1-2</sup>.

The physiology of infant dummy use, non-use among routine users, and infant thumb-sucking deserves further research investigation<sup>7</sup>.

## recommendations for dummy use<sup>134</sup>

If parents choose to use a dummy for their baby, evidence based advice needs to be provided, including the advantages and disadvantages of dummy use<sup>13-4</sup>:

- Breastfeeding mothers are advised to offer a dummy only when breastfeeding has been established, usually after the first 4 to 6 weeks<sup>1-4</sup>
- Dummies can be offered to bottle-fed infants from birth<sup>1,3-4</sup>
- If being used, dummies should be offered for all sleep periods<sup>1</sup>.
- Dummies should not be coated in anything sweet<sup>3-4</sup>
- Parents who wish to use a dummy should do so only for sleeping periods and by the end of the first year of life dummy use should be phased out<sup>3-4</sup>
- If the baby refuses the dummy, parents are advised not to force the child to use a dummy<sup>7</sup>
- If the dummy falls out of the mouth during sleep, do not to reinsert it<sup>1,3-4,7</sup>

- Dummies should be cleaned often and replaced regularly<sup>6</sup>
- Dummies should be discontinued between 6 months and 12 months to reduce the risk of otitis media and dental malocclusion<sup>5-6</sup>
- Parents may need to be supported with strategies to wean infants and toddlers from dummy use, including activities, reward, toys, and other objects of affection<sup>3-4,6</sup>

## when to avoid the dummy

If you observe any of the following problems, it would be a good idea to discontinue dummy use, at least until the problem is resolved:

- Baby's frequency or duration of feeds is reduced by use of the dummy (newborns should be nursing around 8 to 12 times a day)
- Baby is having breastfeeding difficulties (this may be due to nipple confusion) or problems with weight gain (in which case baby needs to nurse as often as possible).
- Mother is having problems with sore nipples (baby may be causing this due to nipple confusion) or milk supply problems (need to put baby to breast, not dummy, at every opportunity in order to increase milk supply).
- Increased incidence of infection: Mother and/or baby have thrush, particularly if repeated episodes or difficult to get rid of.
- Baby is having repeated ear infections



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## to reduce the risks of 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



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