

## Wrapping a cot mattress in plastic does not explain the continuing fall in SIDS mortality

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**Abstract** In 2005 in Auckland, New Zealand, the prevalence of wrapping cot mattresses in polythene, which has been recommended for sudden infant death syndrome (SIDS) prevention by proponents of the toxic gas theory, was 21.7%. This cannot account for the 63% decline in SIDS from 1994 to 2004.

**Keywords** Plastic wrapping of cot mattresses · Postal survey · SIDS

### Text

In New Zealand, mortality from sudden infant death syndrome (SIDS) declined substantially in 1991 due primarily to a change from a prone to side sleeping position [5]. Since then, SIDS mortality has continued to decline, and this has been attributed to the change from a side to a back sleeping position [6].

An alternative explanation for the decline in SIDS has been proposed [8]. Proponents of the toxic gas theory recommend wrapping the cot mattress in thick polythene, and this has been advocated since December 1994 in New Zealand. It is claimed that this is responsible for the further decline in SIDS mortality since then [9]. Mattress wrapping is not part of the official New Zealand SIDS prevention programme and has not been promoted in most of Europe or the United States.

The aim of this study was to determine the prevalence of cot mattresses wrapped in plastic, describe the characteristics

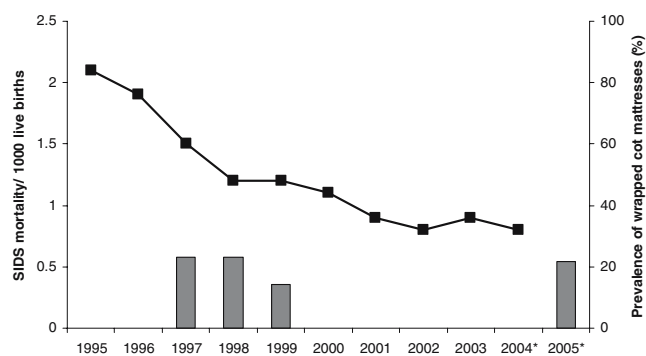
of families that wrap the cot mattress and, finally, to compare this with changes in SIDS mortality. The study received ethical approval from the Auckland Regional Ethics Committee. There were 508 infants born from 24 February to 20 March 2005 at National Women's Hospital, in Auckland, New Zealand. The infants were allocated a random number and the birth list was sorted by the random number, with the first 200 being selected. A similar process was used to select a second group of infants. There were 612 infants born between 15 January and 14 February 2005. In April–May 2005, a questionnaire was mailed to the 400 mothers of the selected infants who now were aged 6–8 weeks and 3–4 months, respectively. The outcome of interest was obtained from the question: "Do you use plastic wrapping over baby's mattress (so that the mattress is completely covered in plastic?)".

The response rate was 70%. Overall, 21.7% of cot mattresses were covered in plastic. Parents who enclosed the cot mattresses in plastic were more likely to be European ( $p=0.016$ ), place the baby to sleep supine ( $p=0.030$ ), not place the baby to sleep in the parents bedroom ( $p=0.014$ ), not bed share with the baby ( $p=0.031$ ) and be a non-smoker ( $p=0.069$ ).

SIDS mortality has declined 63% from 1994 to 2004 (Fig. 1) [6]. The prevalence of plastic wrapped cot mattresses has remained constant since 1997 (Table 1).

The decline in SIDS cannot be explained by changes in the proportion of plastic-wrapped cot mattresses. Although the wrapping of cot mattresses has been recommended by proponents of the toxic gas theory in New Zealand since December 1994, approximately 22% of infants sleep on a mattress that is wrapped, and this proportion has remained constant since 1997. Case-control studies have not shown that wrapped mattresses protect against SIDS [2, 10]. Even if the mattress wrapping was completely effective in preventing SIDS, it could only produce a 22% reduction in SIDS

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**Fig. 1** Trends in sudden infant death syndrome (SIDS) mortality 1995–2004 and prevalence of cot mattresses wrapped in plastic. *Asterisk* Provisional SIDS mortality data

compared with the 63% decrease in SIDS actually observed, unless those infants who slept on a plastic-wrapped mattress were at high risk of SIDS. In fact, the opposite was seen. The parents were more likely to be European, sleep their baby supine, not bed share and be a non-smoker. All these factors are associated with a reduced risk of SIDS.

The strengths and limitations of the study must be considered. In the Auckland District Health Board, all infants are born at National Women's Hospital with the exception of a small number (<4%) that are born at home. Thus, the eligible sample is close to being representative of all births in the study region. Although the participation rate was 70%, which is considered to be good for a postal survey, participants may be more likely to comply with health messages. Non-participants were more likely to be non-European, which had a lower prevalence of mattress wrapping in this study. Thus, the prevalence in the total infant population is probably less than the 21.7% estimated in this survey. No information other than ethnicity was available from non-participants.

Many other countries have shown a similar trend in SIDS mortality, namely, a rapid decrease in SIDS mortality following the introduction of the "Back to Sleep" campaign, followed by a slower decline [1], and these countries have not encouraged mattress wrapping.

In conclusion, wrapping cot mattresses in polythene does not account for the continuing decline in SIDS.

**Table 1** New Zealand studies examining the prevalence of plastic wrapping of cot mattresses

Survey date	Author	Locality	Wrapping (%)
1987–1990	Wilson et al. 1994 [10]	Nationwide	10.9 <sup>a</sup>
1997	Ford et al. 2000 [4]	Canterbury	23.0
1997–1998	Mitchell et al. 2000 [7]	Auckland	23.2
1999	Dow 2000 [3]	Dunedin	14.4 <sup>a</sup>
2005	This study	Auckland	21.7

<sup>a</sup> Includes rubber

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