

Learning From National and State Trends in Sudden Unexpected Infant Death

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In their analysis of national and state trends in US sudden unexpected infant death (SUID) rates in this month's issue of *Pediatrics*, Erck Lambert et al¹ demonstrate that declines in SUID rates have plateaued for the past 2 decades. The state-by-state data in which large disparities in SUID rates are shown should both raise alarm in the 22 states where rates are increasing and bring light to prevention efforts in the 9 states with the largest declines.

Widespread education about safe sleep environments (eg, the Back to Sleep campaign) was associated with large decreases in SUID rates between 1990 and 2002. However, the effectiveness of such campaigns may have peaked as they have encountered cultural barriers, Internet misinformation, and countercampaigns. In light of this, how should we, as health care and public health professionals, proceed?

First, we should recognize that among developed countries, the United States has the highest SUID rate. In a recent international comparison, researchers found that among 8 developed countries, the United States had the highest mean 2002–2010 postneonatal mortality rates (of which SUID comprises the majority) at 2.25 per 1000 live births, ~70% higher than the other countries; only New Zealand, at 2.14 per 1000 live births, came close.² To understand these differences, we must begin to look at variations in national policies. Of these countries, the United States is the only one that does not provide

universal health care,³ home visitors in the neonatal period,⁴ and universal paid maternity leave.⁵ All of these are important protective factors for infant mortality.^{6–8} Additionally, these policies may have positive downstream effects on parental practices. The education received during prenatal care and by home visitors establishes a social norm for safe sleep. Parents are continually encouraged (and assisted in their efforts) by home visitors to breastfeed and to place the infant supine. Many healthy infant care practices (eg, breastfeeding, supine sleep position, safe infant sleep location) cease when the mother returns to work because of poor work support, new caregivers,^{9,10} or the need for increased parental sleep.^{11–14} In the United States, most mothers must return to work when the infant is 1 to 4 months of age, which coincides with the highest risk period for SUID.¹⁵

It is unlikely that, in the current political climate, universal changes in health care, home visitor programs, and parental leave policies on the national scale will occur. Thus, we should look at changes that we can make locally. Although Erck Lambert et al¹ point out that it may be difficult to discern what changes may have been responsible for the state-by-state variability in SUID trends, and although most areas have not committed funding to conduct rigorous trials, there may still be lessons that can be applied to further prevent SUIDs in this country.

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Surveying parental practices and turning to evidence-based strategies are important places to begin. For instance, maternal smoking has been found in >50 studies to increase SUID risk.¹⁶ The 5 states with the highest and rising SUID rates in Erck Lambert et al's¹ study have tobacco use rates in the top 2 quintiles (>18.6%),¹⁷ whereas only 1 of the 9 states with the most dramatic falls in SUID rates had similarly high tobacco use rates.¹⁷ Researchers in several studies have looked at financial incentives as a way to encourage smoking cessation,¹⁸ including in a randomized controlled trial in Scotland, where 24% of pregnant women reported being a smoker. In this trial, in addition to providing stop-smoking support services, pregnant women were provided a financial incentive of up to 400 British pounds (~\$530) throughout their pregnancy to remain smoke free. Women receiving incentives had almost 4 times higher odds (adjusted odds ratio 3.88, 95% confidence interval 2.10–7.16) of remaining smoke free throughout pregnancy.¹⁹ Health districts in New Zealand and Scotland are funding financial incentives to help smokers quit (E.A. Mitchell, DCH, DSc (Med) and D. Tappin MBBS, MD, MSc, personal communication). Given estimates that one-third of sudden infant death syndrome deaths could be prevented if all maternal smoking during pregnancy was eliminated,^{16,20} implementation of similar programs could help significantly lower SUID rates.

As Erck Lambert et al¹ noted, the opioid crisis in the United States may also be a new and yet poorly defined variable in the SUID environment. In one prospective cohort study, researchers found that infants exposed to methadone, heroin, or methadone and heroin had 3.6-, 2.3-, and 3.2-fold increases in SUID, respectively.²¹ Researchers

in another study found a 15-fold increased sudden infant death syndrome rate for opiate-exposed infants.²² It remains unclear if the risk to infants is from the exposure itself, disparate infant care practices, or the increased risk that an impaired caregiver poses. As more infants are born to mothers actively using opiates, it is important for us to further examine these risks so they can be targeted in risk reduction.

In addition to substance and cigarette use, regional comparisons are important because there is still much work to be done with regard to improving sleep practices. US nonsupine sleep position rates are ~25%,^{14,23} whereas rates in other developed countries have consistently been <5%.^{24–30} US bed-sharing rates continue to increase,¹³ and rates of soft bedding use are consistently at 50%.³¹ Qualitative studies have revealed that parents make their infant care decisions largely on the basis of what they perceive will keep their infant both safe and comfortable.^{32–34} Thus, they place infants prone because they believe that supine positioning will increase the risk of aspiration or because the infant will sleep longer.³² They bed-share because they believe that this is the best way to monitor their infant while they are asleep and thus the best way to keep their infant safe.³³ They use soft bedding because they believe that the infant will be more comfortable or because they are concerned about the infant becoming injured against the hard, uncushioned crib sides.³⁴ For behavior change to occur, health care and public health professionals will need to understand and address parental concerns about safety and comfort.

It will also be critical for us to change the way that we communicate with parents and family members. Given widespread access to the Internet, where there

is a false equivalency between evidence-based recommendations and unsubstantiated statements about the safety of not following safe sleep recommendations, health care and public health professionals must be smarter with health messaging. We need to learn to communicate with parents using tools and applications that they already turn to on their mobile phones. One randomized controlled trial revealed that mobile messaging using text messages or e-mails with embedded videos was effective at improving safe sleep practices.³⁵ However, we also need to understand what types of messages work, and this will require partnering with experts in advertising and technology. We need to better use search engine algorithms so that we can increase the likelihood that when parents search “should my baby sleep on the stomach?” they will land on a Web site that provides evidence-based information.

As we approach the Healthy People 2020 goals, it is important for us to take stock and examine both our successes and failures. Although the SUID rate has continued to slowly trend downward nationally, ~3700 infants still die annually, and in many regions of the country the rate continues to rise. However, there are also regions that have had significant successes in decreasing their SUID rates. In the absence of a dramatic change in our health care delivery system that would enable more emphasis on public safety and prevention to improve infant mortality rates, we must commit to learning from local successes and applying them more broadly.

ABBREVIATION

SUID: sudden unexpected infant death

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