THE PĒPI-POD® SAFE SLEEP PROGRAMME

Report on the 2012 distribution and use of portable spaces for promoting safe sleep for more vulnerable babies

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This report is dedicated to all those who act as champions of safe infant sleep within their spheres of influence.

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EXECUTIVE SUMMARY

Overview: Sudden infant death preys on more vulnerable babies in their place of sleep, during a critical stage of development. Babies born premature or low birth weight, and babies exposed to smoking, especially in pregnancy, who also sleep in unsafe positions, places and conditions, are the babies of greatest current concern in New Zealand.

Promoting safe infant sleep is challenged by the age-specific nature of sleep environment risks. Safety considerations must change in step with the developmental changes of the baby. As well, it is challenged by the complexity of needs that parents must manage during a period when young babies wake and feed often and need regular reassurance from the closeness of a parent. While knowledge of risks is a first step in protecting babies, enabling safe action on that knowledge is the next.

The programme: The **Pēpi-Pod®** safe infant sleep programme is one approach being applied in some regions of New Zealand to enable more vulnerable babies to have a safe space for sleeping every time and place they sleep. It is a programme of 'portable sleep space (PSS) plus safety education' that began as an emergency response during the Christchurch earthquakes of 2011, and is now offered to families of babies at increased risk of accidental suffocation. Places of heightened risk include in, or on, an adult bed, on a couch, in makeshift situations or when away from home.

This report describes the application of the *programme* in four regions of New Zealand during 2012. It reports the data collected by 27 agencies for the issue of 449 PSSs to more vulnerable babies, follow-up information for 408 on acceptability of the PSS and spread of safe sleep awareness within recipient networks, and feedback from a survey of 144 about their experiences as participants in the *programme*.

Main Findings: PSSs were issued to elegible babies (99%), mostly Maori (74%), along with the standard safety briefing (93%). They were acceptable to recipient families, most of whom (91%) wanted to keep their PPS after an initial period of use. Recipients collectively spread safety information to an average 5.8 others each, within their networks, engaging more than 2209 whanau in conversations about safe sleep for babies.

Feedback from survey respondents about their experiences using PSSs identified that most received their PSSs before their babies were 4 weeks (70%) and more than half were still using them beyond 12 weeks (54%). Same-bed co-sleeping at some stage was common (68%) with most babies always or usually also in a PSS (76%).

Most babies (90%) were, or were expected to be, sleeping in cots when too big for the PSS. There was one reported accident (<1%) of an older sibling attempting to carry the baby in the PSS and dropping it. Overall, families rated the PSS highly (7-9/9) (92%), valuing specifically its support with convenience (84%), safety (80%) and settling babies (60%). Survey babies were breastfed 'yesterday' (75%) and placed for sleep on their backs (83%), with 91% sleeping in a baby bed and 88% in the same room as a parent 'last night'.

Conclusion: The ***pēpi-pod*** programme was applied consistently and appropriately by distributors. It was acceptable to, and valued by, recipient families, and safety advice was reflected in infant care. PSSs enhanced sleep safety for these more vulnerable babies.

INTRODUCTION

This report describes the 2012 application of the **Pēpi-Pod®** safe infant sleep programme in New Zealand. The programme involves the supply of portable sleep spaces (PSS) plus safety education, to families of babies more vulnerable to sudden infant death.

Reported here is information on the distribution of PSSs, user feedback and diffusion of safe sleep awareness, for four regions of New Zealand where agencies registered to provide the **Pēpi-Pod®** programme (hereafter referred to as the *programme*) entered *programme* data on a central database. This document is a progress report to inform conversations, within New Zealand and beyond, about the acceptability and safety of PSSs and their place within a public health intervention to promote safe infant sleep and reduce sudden infant death.

The *programme* was introduced by Change for our Children Limited as an emergency response following the Christchurch earthquakes of February 2011. At the time, concern for babies' lives was heightened by quake-related disruption to living and sleeping conditions in families. A report on the 2011 project described acceptability and use of PSSs, and diffusion of safe sleep awareness by earthquake recipients[1] within their social networks. It also describes in detail the materials and methods.

Interest in the PSS device and approach spread rapidly to other regions of New Zealand concerned about sudden infant death rates in their populations. During 2012 several agencies committed resources for supplying PSSs and to doing so within established quality protocols and data requirements of the *programme*. Except for Hawkes Bay, all regions are also entering *programme* data into an online database administered by the lead provider.

This report examines 2012 distribution and user feedback records held on the *programme* database. It aims to answer the following questions for study babies:

- Are PSSs reaching priority babies?
- Are PSSs acceptable to Maori parents?
- Do PSSs support families to increase infant safety?
- Do recipient parents follow safe sleep advice?
- Does safe sleep awareness spread from PSS recipients to others in their networks?

LITERATURE REVIEW

New Zealand has high rates of sudden infant death compared to other developed countries. At rates of 1.1 deaths per 1000 live births, and more than twice these rates for Maori, about sixty babies die each year in this way[2]. Currently, most sudden infant deaths are considered preventable, whatever term is used (cot death, SIDS, SUDI, SUID, unascertained, sleep accidents. Most are expected because known risk factors are involved, and many are also explained with accidental suffocation on the rise as a clear cause of death.

The international evidence behind current safe sleep recommendations is well summarised in the position paper of Mitchell et al. (2012)[3]. Identified risk factors for sudden infant death that are relevant to the current report include: babies exposed to any smoking, babies positioned on their sides or fronts, babies getting covered faces, babies sleeping in rooms distant from carers, babies sharing beds (especially if also smoke -exposed), unsafe sleeping environments (beds and bedding), and premature or low birth weight babies.

Local studies give added context for New Zealand babies. A recent study[4] of 221 sudden infant deaths in Auckland from 2000-2009 found that 83% were of Maori or Pacific babies, 64% of babies sharing a bed, and 57% of babies not placed on the back. Most (92%) of the 25 babies who died aged less than one month were sharing a bed at the time. While no data on smoking was available, the study group has previously established smoking rates in the region of 52% for Maori and 29% for Pacific mothers so it can be assumed that many babies who died were exposed to both smoking and bed-sharing.

In another study of South Auckland parents, low rates of diffusion of safe sleep knowledge and practice amongst Maori were found[5]. More than half of Maori mothers smoked while pregnant and up to 65% had their babies sleeping in their beds for at least some of the night. A third had soft items other than bedding in the sleep environment, and 21% were both smoking and sharing their beds with their babies. Authors concluded that appropriate approaches to improving safe sleep awareness and practice need to be developed for the high risk infant, especially for Maori.

Findings from a study of 100 PSS users in Canterbury[6] following the 2011 earthquakes found that the sleeping spaces were widely and appropriately used, enhanced closeness and safety and were rated highly by parents. Same bed co-sleeping with a PSS was common (87%), safe sleep recommendations were widely applied 'last night' (92% back sleeping, 72% in same room as sleeping parent), and safe sleep awareness was spread to an average 3.5 others.

We believe it is important to report on how this safe infant sleep *programme* was applied and experienced in ordinary times, beyond the emergency response. While there is support in some quarters for the innovative approach to safer infant sleep[7], there is caution in others. This report on the current application of the *programme* in different regions of New Zealand is feedback to agencies that provided these services in 2012, as well as information for a wider audience with an interest in this issue.

METHODS

A lead agency developed the *programme,* which includes the supply of safety education and portable sleeping spaces (PSS) for babies. Participating agencies seeking to distribute PSSs in their regions, entered into a memorandum of understanding with the lead agency to clarify roles, responsibilities, expectations and standards for providing regional services, and to ensure adherence to programme protocols and standards.

Materials: PSSs and bedding packs were supplied, on a 'cost recovery for materials only' basis at NZD$60.00 (excl GST) per PSS. Bedding included a cover for the PSS, mattress, mattress protector, two sets of top (wrap-around) and bottom (slip-on) sheets and a double layer merino wool blanket. Safety information was provided as a sticker on the device itself, an information card included with the bedding pack and as 'care' labels sewn into the covers and sheets.

Training: Participating agencies identified local providers to act as distribution outlets and these organisations identified staff members to be authorised distributors. Training of distributors involved completing an e-learning SUDI Prevention programme (*Baby Essentials*[8]) as well as a two hour 'face to face' workshop specific to distribution of the *programme* and providing the safety briefing. Initial training and core materials were provided by the lead agency and were similar for all regions, with provision of on-going training taken up locally.

Protocols: The goal of training was to provide a standard experience across services for *programme* recipients, in terms of assembly of PSSs, delivery of the safety education, completion of data forms and the seeking of signed agreement from recipients to conditions of use. Distributors were supported by a local service coordinator who liaised with the lead agency and was responsible for accountability to *programme* standards.

Three key features of the *programme* are:

- PSS and bedding pack
- a 15 minute safety briefing and demonstration at the time of distribution
- an expectation that recipients will help spread safe sleep awareness to others in their networks.

Referral: An exchange card system was used to promote the availability of the *programme* to health professionals and other potential referrers, with referral criteria and PSS pick-up locations clearly specified on the card. Criteria were: babies aged less than two weeks who were also smoke-exposed, premature or low birth weight, or babies who were Maori.

Monitoring: To safeguard the investment in PSSs and ensure these reached babies most in need, distribution records were closely monitored, especially for ethnicity. Records were automatically emailed to the lead agency which liaised with regional coordinators where a PSSs may have been distributed to a baby not meeting criteria, enabling follow-

up of distributors for clarifying eligibility criteria.

Web support: Dedicated *programme* web pages were developed to help with regional coordination through sharing *programme* information, enabling easy downloads or printing of e-forms for data collection, and promoting local pick-up locations and contacts.

Data collection: Data were collected at distribution (demographic and infant risk information), follow-up after about two weeks using PSSs (acceptability and spread of awareness information) and when babies were about 8-10 weeks old (usage and infant care information). Questions at the two week follow-up contact were:

- Has you baby slept in the PSS yet?
- Do you want to keep it?
- How many people have you talked with so far about protecting babies as they sleep?

Data entry: Distribution data were entered by distributors themselves into the on-line *programme* database. Monthly progress reports were sent to agencies with larger services. Given the high mobility of the recipient group, a goal of 80% was set for follow-up after 2 weeks, and 20% for gaining completed feedback surveys at 8-10 weeks.

Usually, responses were gained from telephone interviews and then entered on-line by distributors. Where recipients provided an email address, a link to the survey was emailed to them with an invitation for them to complete on-line.

Analysis: Distribution and survey data entered by 31st December 2012, for PSSs distributed during 2012, were analysed by frequencies distribution. Where there were missing data, percentages are of the total respondent group. A comparison was made between the Waikato results and those from other regions because Waikato has a large, 'whole of community' service.

Survey data for infant care practices 'yesterday' and 'last night' were analysed for babies younger and older than 4 months. A thematic analysis of text responses was made using the 'find' feature of MSWord to highlight key words associated with themes.

Due to service and data variations, Hawkes Bay results are summarised separately.

RESULTS

In total, nearly 3000 PSSs were supplied to 5 DHB regions during 2012, to Waikato (1500), Hawkes Bay (800, and 300 in 2011), Canterbury (200, and 1000 in 2011), Counties Manukau (300, and 150 in 2011) and Lakes (167). 'Whole of region' services were provided in Waikato and Hawkes Bay and limited services in Lakes, Counties Manukau and Canterbury.

Twenty-seven distributor agencies provided data for their service, half of these for distributing 10 or more PSSs. Records were entered, during 2012, for the distribution of 449 PSSs, the follow-up after two weeks of 408 (90.9%) recipients, and user feedback surveys for 144 (32.1%). Total numbers of PSSs issued to families, but not recorded on the database, PSSs issued to distributors, but not yet to families, or attempts to follow-up recipients or invite to give feedback, are unknown.

Limited data for the 2012 distribution of 324 PSSs in Hawkes Bay were analysed and are presented separately.

Distribution

PSSs are intended for more vulnerable babies in the new-borns period, their purpose being to enhance safety and build sleep habits from the start, when bed sharing is more likely and more dangerous. Results show that the *programme* was provided to appropriate babies (see Table 1). Most were Maori (73.7%), exposed to smoking in pregnancy (64.6%), lived in households were people smoked (64.8%) and were less than 2 weeks of age (10.7% were unborn) when they received their PSS (57.1%).

Many babies had been born prematurely (<37 weeks) or low birth weight (<2500 g) (24.3%), had no other baby bed (28.7%) and were their mother's first child (39.9%). Most mothers of recipient babies held community services cards (76.2%) and were aged less than 30 years (63.3%), with 14.5% of mothers aged less than 20. Just 2 PPSs were given out to babies with no documented risk factors.

Follow-up

PSSs were also intended to be *offered* to families for a period, for them to assess if PSSs would be useful. Follow-up was expected to occur after about two weeks of getting PSSs, to assess acceptability in terms of parents wanting to keep them, and to assess parents' participation in spreading safe sleep information to others. Follow-up information is presented in Table 2.

Most families (91.6%) were contacted after an initial period with the PSS, to ask if they wanted to keep or return it. The programme goal of follow-up after two weeks was met for 30.2% of recipients and one third of babies (31.6%) were less than 28 days at the time. Most babies had slept in their PSSs (91.9%) by the follow-up contact and most parents wanted to keep their PSSs (91.4%). Of the 29 who did not want to keep them, 11 got their

PSSs when their babies were more than 4 weeks old, had not used them and their babies were older than 8 weeks at the time of follow-up.

In exchange for the *programme*, recipients were invited to help spread safe sleep awareness to whanau and friends, by sharing what they had learned in the safety briefing. Of the 408 recipients followed-up, 85.8% did this and reached 2209 people at a diffusion rate of 5.4 others engaged in conversations about safe infant sleep, per PSS recipient.

In summary, results show high rates of follow-up of PSS recipients, acceptability of PSSs, and spread of safe sleep awareness by the study group.

Feedback

Service providers were expected to collect user feedback data when babies were 8-10 weeks old, from a minimum one in five recipients. This was achieved. Feedback surveys were completed for 144 (30.1%) PSS users and data were entered online, mostly by distributors. Where PSS recipients had provided an email address (16.9%), they were sent the internet link and invited to complete the survey online. Survey data were entered by one programme recipient in each of Tauranga and Hawkes Bay, and all others were from the four DHB regions previously described. Responses are presented for Waikato and 'other' DHBs on Tables 3a. (for pick-up), 3b. (for usage), 4. (for infant care for 'yesterday' and 'last night') and 5. (for household characteristics).

Pick-up: Most people got there PSSs from a health or whanau worker (87.5%) when their babies were less than one month old (70.1%), and 59 received the *programme* during pregnancy. There was consistency in the distribution experience for: showing how to make up the PSS (93.8%), explaining the 'rules of protection' (93.8%) and being asked to help spread what they were told to others (93.1%).

Length of use: Nearly half of respondents were no longer using their PSSs at the time of completing the survey (47.2%), the main reason being that babies had outgrown them (70.6%). The overall age of use, considering current and completed users, was beyond 12 weeks for 53.5% of babies and beyond 16 weeks for 29.9%.

Same bed co-sleeping: It was common for babies to have slept in the same bed as parents at some time since getting their PSSs (68.1%) and in most cases babies were 'always' (49), or 'usually' (26), in PSSs (76.5%). Most of the 22 babies 'sometimes' (16), or 'never' (6) in PSSs when same-bed co-sleeping, were older than 12 weeks (17) at the time of completing the survey. Of the five younger babies, none were Maori or Pacific, three were exposed to smoking (in pregnancy and in households), all were exclusively breastfed and placed on the back to sleep 'yesterday', and just one shared a bed with an adult 'last night'.

Next bed: Most respondents were using, or planned to use, cots after stopping using the PSS (89.6%). Thirteen babies were not, or would not be, using baby beds

following use of PSS. The intended or actual places of sleep were: with an adult in their bed (9), in a bed made up on a couch by 'Nana' (1), on a mattress on the floor (1), and either in bed with a parent or in a cot (2).

Value: Respondents were asked to rate the PSS on a scale of 1 (low) to 9 (high) in terms of the overall idea and its support of them. Most gave high ratings (7-9/9) for the overall idea (91.7%), and for its support of them with convenience (84.0%), safety (79.9%) and settling their babies (59.7%). Bedding items that came with the PSS were also commonly used; 88.2% used the wrap around sheet and 91.7% used the merino blanket.

Two thirds of survey respondents (93) named 'other' ways in which PSSs had supported them. Most comments related to 'portability' (expressed as having a bed for baby when away from home (48)) and 'proximity' (expressed as being able to move baby easily about the house (20). Comments are listed by theme in Appendix 1. with examples given below:

> *"Great that it was so transportable. Able to take it anywhere and baby still had exactly the same sleeping environment as at home."*
>
> *"I take it to church and she sleeps in the PSS instead of her car seat."*
>
> *"It was good to carry baby, while sleeping, to wherever you went to around the house."*
>
> *"I attended a wananga at my marae in the weekend. Took my baby and the PSS. Very convenient and safe to sleep my baby in the PSS beside me. My whanau was very impressed with the PSS."*

Infant care for 'yesterday': Most babies were breastfed (fully or partially) 'yesterday', 75.0% of younger and 67.7% of older babies. Half of younger babies (51.3%), and many study babies overall, were fully breastfed 'yesterday' (43.0%). While most babies (82.6%) were placed for sleep on their backs 'yesterday', a concerning 25 babies were placed on their sides (17), fronts (2) or in no usual position (6). Of these, 13 were younger babies (aged less than 17 weeks) and exposed to smoking in pregnancy (10), however, all 13 babies slept in a baby bed 'last night', with 2 in a baby bed *and* in the same bed as a parent.

Infant care for 'last night': Most babies were sleeping in a baby bed 'last night' (91.0%) and in the same room as a parent (87.5%). For the 4 younger babies not sleeping in a baby bed 'last night', all were sleeping in the same bed as an adult and had been placed on the back for sleeps 'yesterday'. Three were also fully breastfed 'yesterday' and completely smokefree. One baby was premature, partially breastfed 'yesterday', smoke-exposed during pregnancy and living in a household where two people smoked.

Accidents and incidents: There was one reported accident where an older sibling (<6 years) tried to carry the PSS with baby in it and dropped it. Three people

reported incidents from: an older sibling leaning on the PSS with baby in it and the PSS tipping, PSS tipping slightly when on the floor due to the movements of the baby, and a baby bumping her lip from bobbing her head against the 'sharp edge' of the plastic box. Another incident involved a grandfather sitting on the PSS, but baby was not in it and there was no harm to the box.

Household characteristics: More than half of respondents reported smoking by the baby's mother before (59.0%) and during (50.7%) pregnancy, and by household members (61.8%). Ethnicity variations of babies reflected the demographic characteristics of regions with higher proportions of Maori in Waikato and Rotorua, Pacific in South Auckland, and non-Maori and non-Pacific in Christchurch. Reported ethnicity of babies of survey respondents included Maori (68.1%), Pacific (29.2%) and neither Maori nor Pacific (22.2%).

Comparison of distribution versus feedback groups: Where data allowed, characteristics of the distribution (N=449) and feedback (N=144) groups were compared to identify any variations. Proportionately fewer Waikato recipients provided feedback on using PSSs (59.7% vs. 73.3%), resulting in fewer Maori babies (68.1% vs. 74%) and babies exposed to smoking in pregnancy (50.7% vs. 64.8%) represented in the feedback group. However, the proportion of babies who were Maori in both distribution and feedback groups was similar for the Waikato (86.1% vs. 82.1%).

General comments: When asked "*What else would you like to share about your experience using a PSS?*" most (77.1%) respondents provided comments. Many related to the features of portability and proximity as previously reported, and also to general appreciation, ease of settling, convenience, reassurance, safety, bonding and being a talking point.

> *"I think it's fantastic. I love sleeping with my baby in my bed. The pod looks cool as well."*
>
> *"I can easily rock the **pēpi-pod** whilst baby in bed next to me when he's unsettled."*
>
> *"Best idea for mothers wanting their baby to sleep in bed with them".*
>
> *"Helping us to both be close to and bond with the baby."*
>
> *"Best invention, huge talking point. Have talked to heaps of people about it and the safe sleeping message."*
>
> *"Have really appreciated having it. The closeness of baby and knowing she is safe in our bed is wonderful."*

Hawkes Bay: Distribution information for 2012, for the Hawkes Bay service was taken from exchange cards completed by referrers, and not from distribution forms completed at the time of distribution. It is likely, but cannot be assumed, that most babies reported here actually got a PSS and the safety briefing. From data provided, PSSs were supplied to, or intended to be supplied to, 324 babies. Of these, 208 (64.2%) were Maori, 192 (59.3%) smoke-exposed, 33 (10.2%) premature

and 38 (11.7%) low birth weight.

An evaluation of the broader Hawkes Bay Safe Infant Sleep programme has been undertaken locally and a report is expected soon.

DISCUSSION

This is an important report for many reasons. It describes the extension of the **Pēpi-Pod®** programme of portable sleep spaces and safety education, beyond its beginnings as an emergency response, to its current status as a funded service integrated into routine health care. In the absence of evidence from more formal studies, it serves as a progress report to give confidence to concerns about the acceptability and safety of the approach in real world conditions.

It is important because of the persistent high rates of preventable infant deaths for Maori babies, the failure of traditional approaches to redress mortality disparities, and the promise that the findings in this report hold for a practical, empowering and enduring solution to the tragedies.

It is important because of the babies described. All but two met criteria for 'more vulnerable' and the report confirms, from data and comments, that these priority families valued highly the support of the infant sleep spaces. Their parents used them appropriately, applied safe sleep advice to their care, and engaged enthusiastically in helping to spread safe sleep awareness to whanau. While the sleep space itself may attract most attention for its place in protecting priority babies, the role of recipient families in spreading safe sleep awareness deserves at least an equal share for its place in empowering priority communities[11].

It is important because it demonstrates the successful replication of a health intervention across sites while staying true to core design features of the *programme.* This is programme fidelity[9,10] or 'conformity to standards' and is usually easier to achieve within, rather than between, agencies. Successful interventions often fail when applied to other settings, because it can be tempting to take an idea and want to modify and adapt it to local conditions, without understanding the essential, and sometimes subtle, components that make it work. In this case, participating agencies have embraced the standards and protocols of the *programme* and, with no new staffing allocations, worked to supply PSSs, provide the candid safety briefing, and achieve relatively high levels of follow-up and feedback, all in a standardised way.

In this programme, essential features include: specified vulnerability criteria (Maori, smoke-exposed and premature or low birth weight babies); a standard product (for quality assurance); early issue (during pregnancy or new-born period); standard safety briefing; the *offer* of the PSS and time to try it (respect for personal choice); the exchange of the PPS for help with spreading safe sleep awareness (law of reciprocity); timely follow-up (after two weeks); data requirements (online entry) and user feedback surveys for a 20% sample when babies are 8-10 weeks.

The report is important for the comments offered by survey families and the voice this gives parents, as a group, in the broader safe sleep discussion. For this reason we listed all comments in the appendices. Comments are strong and consistent that portability was a

valued feature of an infant sleep space, that parents preferred to have their babies close by them even in the day, that PSSs supported parents with the practical management of their babies, and that, in their assessment, PSSs made sharing their beds with their babies safer.

Threaded through comments was a sense of appreciation for the integrity parents experienced in being able to meet the needs of their baby as well as their own. By day, they could settle baby in the PSS wherever they were themselves, thus meeting the baby's needs for closeness to a parent. Yet, they could also take their sleeping baby with them, undisturbed, when they needed to move somewhere else, thus meeting their own needs to be close to their baby. Similarly at night, there were references to responding easily to babies' needs for feeding or comfort, as well as meeting parents' needs for regular reassurance checks and minimal disruption to rest.

Rather than restrict options for the safety of babies, as some safe sleep recommendations may, findings suggest that the PSS increased options and enabled parents to manage safely the complex needs of both babies and parents, especially in the night.

The report is important for the positive snapshot it takes of key infant care practices of parents for this group of more vulnerable babies. In the safety briefing given to all families, protection was promoted as 'safe space *plus* safe care'. For survey babies generally, breastfeeding rates (full and partial) were encouraging (72%), considering all but 22% of babies were Maori or Pacific for whom lower than national rates are consistently reported. More than half of younger babies (<17 weeks) were fully breastfed 'yesterday'.

Levels of back sleeping for 'yesterday' were also encouraging (83%) although there is work still to do to achieve exclusive back sleeping, especially where there are other risk factors. Also encouraging, were the high rates for same room (88%) and 'protected' same bed (76%) co-sleeping 'last night'.

Together, these results suggest that families of more vulnerable babies *can* be reached with safe sleep education and *can* adopt recommended practices. A key safety practice not sufficiently influenced by this or other interventions is household smoking.

Smoking rates during pregnancy and in households were high for the distribution group (65%) which was expected given that smoking was a key eligibility criterion. There was a drop off in smoking from 59% before to 51% during pregnancy for survey respondents, suggesting women make the change they can, but the majority remain overwhelmed by the motivational force of their addiction to nicotine. Babies need to be smokefree if we are to see real gains for their health and survival, and all safe sleep initiatives need the smokefree message integrated into the prevention approach and to pursue it as a goal.

When comparing PSS user groups of *earthquake*[1] (2011) versus *more vulnerable* baby (2012), as expected, more babies amongst 2012 users were Maori and Pacific, exposed to smoking, with no baby bed, and in families with community services cards. The user

groups were similar, however, in their high ratings for the value of PSSs. It is likely that PSSs have a more generalised benefit for families of young babies over and above safety; that they meet a range of practical needs, too. Most conventional nursery furniture is designed as fixed sleeping spaces once assembled, yet the behaviours of babies and parents in this study suggests that such designs fail them in many instances. When a portable option was also available it supported ease of responding and therefore the parent—baby relationship itself.

Babies more vulnerable to sudden infant death are currently the main users of PSSs, and usage is during the peak age of risk. This raises the chance, over that for other types of baby bed, of a baby dying when sleeping in one. This is an important discussion to be having within prevention circles and a reason to be highly vigilant about the PSS safety briefing within this *programme*. At current rates for sudden infant death of 1.1 per 1000 live births[2], and more than twice these rates for Maori, 5-6 babies would be expected to die, statistically speaking, within a group of 3000 PSS users.

When parents receive their PSS they sign an agreement to safe conditions of use which states clearly that the PSS is not a guarantee that their baby will not die and that the 'rules of protection' are an essential companion of the sleep space. Yet a few parents still placed their more vulnerable babies to sleep in non-supine positions, and a very few were same bed co-sleeping directly with adults. This report identifies practices to strengthen within this *programme*, in applying safe sleep advice to babies already burdened by being more vulnerable: placement on the back and 'protected' same-bed co-sleeping for *every* baby using a *PSS,* every time and place they sleep.

Findings presented here are meaningful only within the context and limitations of this report and cannot be generalised more widely. However, they do describe what is possible for this group of families. We have only been able to report pooled data entered by PSS distributors. It would be interesting to know for each region, the total number of PSSs issued to distributors by the provider agency, distributed to families, and held in stock, for 2012. Also, it is likely that all three groups (distribution, follow-up and feedback) were biased samples based on compliance of distributors with data entry and ability of recipients to be contacted, given the transient nature of the study population. However, for the data available, differences between distribution and survey families were minor, and despite the lack of evidence for representation, all but two babies described carried a statistically increased risk for sudden infant death.

Families themselves have suggested ways in which the *programme* may be improved and we have responded where we can. The mattress has been increased to 3.5 cm in depth, the box supplied will be of a 'softer' virgin polypropylene plastic, and the cover fabric a lighter colour.

CONCLUSION

The **Pēpi-Pod®** programme in 2012 met all its aims for supporting parents and enhancing safety for more vulnerable babies.

Portable sleep spaces were distributed to priority babies and were acceptable to recipient parents, most of whom were Maori. The PSSs supported families with safety when babies were same-bed co-sleeping as well as when babies slept in, or on, adult beds, on couches or when away from home. Safety recommendations promoted in the safety briefing were reflected in the infant care practices of survey families for 'yesterday' and 'last night'. Recipient families were effective in spreading safe sleep awareness to others in their networks.

While prevention is a response to evidence of increased risk, such as from smoke-exposed babies sharing beds with their parents, we must consider the interdependent nature of the infant-parent relationship and pursue safety solutions that are realistic for people. The supply of portable sleeping spaces within a structured programme of support is one such option where meeting the needs of babies *and* parents means everyone benefits. Consideration for this approach is recommended to any region concerned about sudden infant death in its population of more vulnerable babies.

Postscript

As this report went to press on 19 February 2013, *Statistics New Zealand* released population information for 2012[12]. Infant mortality rates were the lowest on record for New Zealand (4.2 infant deaths per 1,000 live births in 2012, down from 4.7 in 2011).

Mortality for Maori infants dropped most markedly to 82 deaths in 2012, down from 123 in 2011. Whether this sharp drop in deaths for Maori babies is a fluctuation or the start of a trend will be borne out in time.

It is worthy of note, however, that total infant deaths reduced, in the five regions providing the **Pēpi-Pod®** programme in 2012 (from 150 in 2011 to 112 in 2012) compared to the 15 regions who were not (from 140 in 2011 to 144 in 2012), and for both neonatal (from 79 to 67 vs 86 to 91) and post-neonatal (from 71 to 45 vs 54 to 53) babies.

RECOMMENDATIONS

We recommend the following to enhance the effectiveness of the **Pēpi-Pod®** programme and reduce the likelihood of a preventable death in a PSS.

1. That participating agencies **preserve the core components** of the *programme,* identified in *programme* documents provided by the lead agency[1] and in this report.
2. That every effort is made to **systematise the early issue of PSSs** with a goal of before 2 weeks for 80% of babies. Opportunities for preventing sudden infant death are lost with every sleep that is not protected in the early days and weeks.
3. That referrers and distributors focus safety education on **safe positioning** of babies within the PSS, with a goal of 100% of babies in the *programme* placed flat on their backs and on a level surface every time they sleep.
4. That referrers and distributors focus their explanation for safe sleep advice on **promoting airway protection,** discussing ways in which breathing can be put at risk and babies can suffocate.
5. That the safety briefing follows the **checklist of topics** to ensure a standard for all families, and emphasises supervision of children and pets, consideration for safety in where PSSs are placed, and the daily airing of the mattress.
6. That distributors and health professionals **hold recipient families accountable** to keeping the 'rules of protection' agreed to when signing the terms and conditions for the safe use of PSSs.
7. That agencies participating as distributors build accountable **follow-up and documentation expectations** into the distribution role.
8. That creative approaches are explored, as well as existing ones, to **support whanau to be smokefree** so that their babies have a better chance in life.

Table 1. Distribution of PSSs by region, agency and characteristics of babies and parents (n=449)

	REGION			
	Others	**Waikato**	**TOTAL**	
	N	N	N	%
DHB REGION				
Waikato			329	**73.3**
Canterbury			45	**10**
Counties Manukau			40	**8.9**
Lakes			35	**7.8**
total	120	329	449	
AGENCY				
Distribution agencies contributing data				
for < 10 pods	5	9	14	-
for 10 or more pods	4	9	13	-
Distribution numbers by quarter				
Jan-Mar	29	13	42	**9.4**
Apr-Jun	25	102	127	**28.3**
Jul-Sep	40	145	185	**41.2**
Oct-Dec	26	69	95	**21.2**
NHI numbers recorded				
for mother	34	267	301	**67.0**
for baby	37	285	322	**71.7**
BABY CHARACTERISTICS				
Risk factors for sudden infant death				
smoking in pregnancy	75	215	290	**64.6**
household smoking, drug or alcohol use	77	214	291	**64.8**
premature or low birth weight	29	80	109	**24.3**
Baby's ethnicity				
includes Maori	62	269	331	**73.7**
includes Pacific	35	37	72	**16.0**
does not include Maori or Pacific	29	39	68	**15.1**
Has a baby bed				
yes	80	240	320	**71.3**
no	40	89	129	**28.7**
Age of baby when PSS received (in days)				
not yet born	17	31	48	**10.7**
0-15 days	43	165	208	**46.3**
15-28 days	22	32	54	**12.0**
>28 days	35	96	131	**29.2**
PARENT CHARACTERISTICS				
Age of mother (in years)				
<20	18	47	65	**14.5**
20-30	63	156	219	**48.8**
>30	35	79	114	**25.4**
not known	4	47	51	**11.4**
Age of father (in years)				
<20	8	22	30	**6.7**
20-30	41	93	134	**29.8**
>30	38	79	117	**26.1**
not known	33	135	168	**37.4**
Known to hold a Community Services Card				
mother	77	265	342	**76.2**
father	31	126	157	**35.0**
Mother's first baby yes	52	127	179	**39.9**
Email address provided yes	30	46	76	**16.9**

*"Friends and family outside our area were very interested in the **pēpi-pod** and were giving a lot of good feedback."*

Table 2. Follow-up information on age of baby, timing of follow-up, PSS acceptability, and safe sleep awareness diffusion rates, for recipients of a PSS (N=408).

	REGION			
	Others	Waikato	TOTAL	
	N	N	N	%
Recipients followed up				
Number	105	303	408	**90.9**
Timing of follow-up				
within 14 days	25	98	123	**30.2**
15-28 days	48	111	159	**39.0**
>28 days	30	94	124	**30.4**
missing data	5	13	18	
Age of baby at follow-up				
<4 weeks	31	98	129	**31.6**
4-8 weeks	34	96	130	**31.9**
> 8 weeks	30	82	112	**27.5**
missing data	10	27	37	**9.0**
Acceptability of PSS at follow-up				
baby had slept in pod	93	282	375	**91.9**
parents wanted to keep it	87	286	373	**91.4**
Diffusion of safe sleep awareness				
no. who spoke with others	79	271	350	**85.8**
no. of 'others' reached by recipients	455	1754	2209	-
diffusion rates (people /recipient)	4.3	5.8	5.4	-

Table 3.a. Feedback from recipients on getting their PSS, by region (n=144).

	REGION			
	Others	Waikato	TOTAL	
	n	n		%
Feedback surveys completed				
number	58	86	144	30.1
PSS Distributor				
health or whanau worker	43	83	126	87.5
Age of baby when got pēpi-pod				
unborn or <1 wk	26	33	59	41.0
1-4 wks	13	30	43	29.9
5 or more wks	17	22	39	27.1
Distribution process				
shown how to make up pod	52	83	135	93.8
'rules of protection' explained	50	85	135	93.8
asked to help spread awareness	53	81	134	93.1
Age of baby when survey completed				
< 17 wks	32	43	75	52.1
17 or more wks	25	43	68	47.2
Premature or low birth weight				
Number	13	24	37	25.7

Table 3.b. Feedback from recipients on using their PSSs, for Waikato and 'other' regions (n=144).

	REGION			
	Others	Waikato	TOTAL	
	N	N	N	%
Number of respondents	58	86	144	
Still using at time of survey				
all or most sleeps	8	24	32	**22.2**
some sleeps	19	22	41	**28.5**
no, stopped using it	29	40	69	**47.9**
Reason for stopping (N=69)				
baby too big / starting to roll	23	25	48	**69.6**
settling in cot / bassinet	0	10	10	**14.5**
safety concerns	1	1	2	
other	5	4	9	
Age of baby at stopping (N=69)				
<=12 weeks	18	18	36	**52.2**
>12 weeks	11	22	33	**47.8**
Overall period of use				
beyond 12 weeks of age	30	47	77	**53.5**
beyond 16 weeks of age	12	31	43	**29.9**
Any same bed co-sleeping (N=98)				
Yes	42	56	98	**68.1**
baby always/usually in a PSS	35	40	75	**76.5**
baby sometime/never in a PSS	7	15	22	**22.5**
Used bedding provided with PSS				
wrap-around sheet	50	77	127	**88.2**
merino blanket	50	82	132	**91.7**
Ratings of high support (7-9/9) for				
settling	29	57	86	**59.7**
safety	43	72	115	**79.9**
convenience	46	75	121	**84.0**
Place of sleep after PSS				
cot or other baby bed	55	74	129	**89.6**
in adult bed with adult	2	9	13	**9.0**
makeshift sleep space	0	2	2	**1.4**
Any accidents with baby in PPS				
accidents	0	1	1	**0.7**
incidents	1	2	3	**2.1**
Rating for 'overall, PSS a good idea'				
high (7-9/9)	50	82	132	**91.7**

Table 4. A comparison of younger (<17 weeks) and older (>16 weeks) babies by infant care practices of parents applied 'yesterday' and 'last night' (N=144).

	AGE OF BABY		TOTAL	
	<17 wks	>16 wks		
	N	N	N	%
AGE OF BABY				
younger (<17 wks)	75	-	75	**52.1**
older (>16 wks)	-	68	68	**47.2**
INFANT CARE PRACTICES OF 'YESTERDAY'				
Breastfeeding				
full	39	23	62	**43.1**
partial	18	23	41	**28.5**
no breastfeeding	19	22	41	**28.5**
Position placed for sleep				
back	63	56	119	**82.6**
front or side	12	7	19	**13.2**
no usual position	1	5	6	**4.2**
INFANT CARE PRACTICES OF 'LAST NIGHT'				
Slept in baby bed				
yes, in PSS	24	12	36	**25.0**
yes, in another type of baby bed	48	47	95	**66.0**
no	4	9	13	**9.6**
Slept in same room as parent				
yes, but not in same bed	55	39	94	**65.3**
yes, and in same bed and in PSS	11	5	16	**11.1**
yes, and in same bed but not in PSS	4	12	16	**11.1**
some other place	6	12	18	**12.5**

Table 5. Household characteristics of survey respondents, by region.

	REGION		TOTAL	
	Others	Waikato		
	N	N	N	%
Region of nearest town/city				
number	58	86	144	**30.1**
Ethnicity of baby				
includes Maori	24	74	98	**68.1**
includes Pacific	17	25	42	**29.2**
does not Maori and Pacific	16	16	32	**22.2**
Maternal Smoking				
of mother before pregnancy	33	52	85	**59.0**
of mother during pregnancy	29	44	73	**50.7**
Household smoking				
by 1 person	11	25	36	**25.0**
by 2 people	14	24	38	**26.4**
by 3 or more people	6	9	15	**10.4**
total number of households	31	58	89	**61.8**

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APPENDICES

Appendix 1.

Examples of comments from survey participants on 'other' ways PSSs supported parents, grouped by theme.

Portability (at home)

- Able to move baby to kitchen or lounge.
- Convenient to move baby from one room to another when she is sleeping.
- Enables me to do other things while bubs in a safe place.
- It was convenient to use in front of TV.

Portability (away from home)

- Easy to take with me and safe when away from home.
- Good when visiting Nana, baby sleeps in it at Nana's day and night.
- Great for having in the car to take baby out in evenings so we didn't have to leave her to sleep in car seat.
- Great that it was so transportable. Able to take it anywhere and baby still had exactly same sleeping environment as at home.
- I can take it to the marae and other whanau when we visit.
- I take it to church and she sleeps in it instead of her car seat. Thank you.
- Taken to overnight stays at whanau.
- When visiting whanau, I take ***pēpi-pod*** with us, so that I can just pick baby up and move. him to another room if need be.

Closeness

- Continued the bond between mother and baby.
- Good to carry the baby while sleeping, to where ever you went to around the house.
- Got me in a habit of separate bed for baby but he still sleeps in our bed.
- Helping us to both be close to and bond to the baby. Having baby sleep between both parents gives equality to Mum and Dad, whereas due to breast feeding men often can feel left out or less important.
- I was able to check him without getting out of bed. I always knew he was warm, and feeds were easy as I also didn't have to get out of bed to get him.
- I found it comforting to know that he was fine all night.
- Knowing baby secure, safe and warm. Easy to move ***pēpi-pod*** to other room for usage.
- Mummy and Daddy got a better sleep.
- She was pretty sick and we felt better that we were able to have her close to us but safe at the same time.

Settling

- I can easily rock the ***pēpi-pod*** whilst baby in bed next to me when he's unsettled.
- I would put ***pēpi-pod*** on my knee and rock him to sleep. Very helpful.
- The ***pēpi-pod*** was amazing in the first weeks home from hospital when baby slept most of the day, we had them in the lounge so it was warmer from the fire everyone could see baby and then when it was time for mumma to have a rest I could just carry the pod into the bedroom and co-sleep with baby until it was time for a feed where there was an

easy transition into bed with me for a feed and then back into the ***pēpi-pod*** .

Diffusion of awareness

- A discussion point with whanau and friends.
- Educating my nieces who are young Mum's around safe sleeping for their babies.
- Had lots of interest from expecting mummies. Talked about the ***pēpi-pod*** with whanau.
- I highly recommend my ***pēpi-pod*** to others.
- My whanau was very impressed with the ***pēpi-pod***.
- Taken baby and the ***pēpi-pod*** to my place of employment - Te Kuiti Kohanga reo.

Appendix 2.

General comments from survey participants on their experience using PSSs, grouped by theme.

General appreciation

- Awesome to have a ***pēpi-pod***. Education and the follow up gave me a chance to re think and maybe give up smoking.
- Overall, a brilliant thing, it's neat.
- Best experience ever.
- Best idea for mothers wanting their baby to sleep in bed with them.
- Enjoyed using it and would recommend it to other families.
- Every mother should try it, especially if you're a heavy sleeper, or for travelling. I splash the information on Facebook. My cousin has it now. Have given everything to them.
- Excellent option for babies. I have thoroughly recommended the ***pēpi-pod*** and will definitely share mine.
- Excellent. Totally ataahua (beautiful) ***pēpi-pod***.
- ***Pēpi-pod*** is awesome.
- Love it. Fantastic concept and wonderful to be given one by Change for our Children.
- Useful while I was using it.
- Helped heaps.
- Highly recommend it for all mums with new-borns.
- I am raising my mokopuna and his older two sisters. I was desperate to receive this ***pēpi-pod.***
- I believe this is an amazing inexpensive idea. It should have been brought out long ago. I guess there were other things but these are great. You can take it anywhere with you as newbies are way too small for a port-a-cot.
- Good and cool and whanau loved it.
- I would like to thank Change for Children for giving us one. They are an awesome wee bed, even though they are a simple creation, they are amazing. Thank you.
- Really good.
- Great.
- I think it's fantastic. I love sleeping with my baby in my bed. The pod looks cool as well. I've had heaps of great comments about it and am passing it onto my cousin who is due in December.
- It is wonderful and a great initiative, I have passed it on to a pregnant friend with all the necessary info.

- It's a great concept, just wish I could have made use of it longer.
- It's a very good idea and support it fully, think it's a good thing for mothers.
- Very good.
- Recommend it.
- Very happy with it. Will use it again for next child.
- Really loved having a ***pēpi-pod*** and the chat that went with it. Fabulous resource and I am so grateful to have been able to benefit from it. Thank you.
- What a wonderful invention. Who ever thought of this is a genius.

Convenience

- Convenient and safe.
- Convenience. Had no bed for baby.
- Convenient.
- So convenient, great back up.
- Convenient. Easy to move around. Couldn't afford a cot or a bed for baby when he was born. We now have one so we are slowly transitioning him to sleep in his cot for when he grows out of the ***pēpi-pod***. Recently I have to get him to sleep first before I put him in the ***pēpi-pod*** , as he now prefers his cot, but it's so convenient to move him in the ***pēpi-pod*** if I have to when he is asleep.
- It was awesome. Thank you.
- We put ***pēpi pod*** in a bassinet so that we can move the baby around. Sometimes it is also good to let baby play in the pod for a while as she enjoys a before-bed-time exercise. We also put a towel under her head as a mini pillow to prevent spew soaking the mattress.
- The convenience.
- The ***pēpi-pod*** has taught me not sleep with my baby in my bed. It is very convenient and would recommend it to other mums that have no bed for their baby.
- Can make it up a bit quicker.
- The total convenience, not only for in the home, but especially also whilst travelling.
- Very handy when visiting other whanau.
- Just very handy and would definitely recommend to others.

Portability

- Easy to take with us in the car. Have told my friends and whanau about it. Not using it now as baby too big. I am going to give it to someone in my whanau who is due to have a baby.
- It is portable can be moved while baby in it, convenient when trying to make bed.
- It's good and handy to have, you can take it anywhere.
- It's good for when we go travelling and staying at other whanau houses.
- It was good to have for when you're going away on long trips.
- Very good and easy to carry.
- *The* ***pēpi-pod*** is excellent. I loved the sheets and blanket and continued to use them. I also took the ***pēpi-pod*** with me when visiting relatives within Auckland and outside of Auckland e.g. when we flew to Napier.

Reassuring

- Great idea. Is calming knowing my child can be right next to me.
- Great initiative. Baby took some time to settle into the ***pēpi-pod***, was almost going to

send it back but he settled. He now settles into a cot, too.

- Just gave peace of mind when baby slept in bed with us.
- Since I started using ***pēpi-pod*** my baby's daytime nap has improved a lot.
- Thanks for letting me have it. It was great not to worry about rolling onto her at night.
- The ***pēpi-pod*** has helped in the assurance of a mum like me who has lost a baby before and had other babies suffer from apnoea and other health issues due to being born so premature. My latest baby may be my healthiest but she is growing and developing well in ***pēpi-pod*** we love it.

Safety

- The ***pēpi-pod*** was brilliant. Having baby so close to us at night, but still safe, was fantastic. Thank you so much. Baby number two will also use it.
- It's a shame there isn't something more like it on the market in NZ. I think a lot more people would choose to co-sleep safely if there was.
- I love how easy it is to use, how she can see out the sides, how it feels like she's in bed with you, but safe. THANK YOU!
- I love the ***pēpi-pod*** for still being able to have my daughter in bed with me while also being safe. Also the convenience of how easily transportable it is if we are staying away.
- I love using it. Without it, my baby would not be in a bed that she loves to sleep in all the time.
- Have really appreciated having it. The closeness of baby and knowing she is safe in our bed is wonderful.
- Good safe way for baby to sleep.
- Great, very supportive, great initiative. Keeps babies safe.
- It gives my husband the opportunity to sleep so close to the baby overnight, but without him sleeping over the baby, which was not possible before we had the ***pēpi-pod*** .
- It is a really good, safe idea and it would be great if there was a stage two pod for bigger or older babies who have grown out of it.
- It was a big help. It is portable, can sit on any flat surface and I know my baby is 100% safe. It's easy to clean. I love it.
- It's nice to have on your bed for safety, to prevent baby from rolling off the bed.
- Made me feel safer about sleeping near her so I was able to go into a deeper sleep and feel more rested because I was worried about rolling onto her before.
- Our baby had on-going medical issues and we felt so much safer having her right there with us.
- ***Pēpi-pods*** are an excellent idea it has helped myself and my partner settle into parenthood.
- ***Pēpi-pod*** makes you feel safe that the baby wouldn't be rolled over by adults in bed and it's good to take around the house while the baby is sleeping in it. Thank you very much.
- Safety - the best experience for safety. Would give it a 10 plus.
- So convenient, so safe.
- So safe, so convenient, easy to carry from room to room without disturbing my babies sleep.
- The ***pēpi-pod*** is just the best and has given me such peace of mind. I can most times settle my baby well in the pod and always feel that my baby is especially safe when sleeping.

Spreading awareness

- I keep spreading the word. The ***pēpi-pod*** is an awesome idea. Greatest and best idea ever.
- Can talk about ***pēpi-pods*** to others. Feel good it's on hand, and can be passed on to others. It's free.
- Spoke to everyone that came for a visit
- Spoken to whanau and used at homes of whanau during visits.
- Taken to Kohanga where I am a kaiako.
- Thanks for giving it for free we have passed it on to family member who is due soon.
- Best invention, huge talking point. Have talked to heaps of people about the pod and the safe sleeping message.
- The ***pēpi-pod*** is a great initiative for mothers that do not have a bed for baby to sleep once baby is born. It is a great way to display safe sleeping & I highly recommend these for other mum's that need them.
- My sister is having a baby and she wants the ***pēpi-pod***.
- Think it's a really good idea. Interested to see what the stats are, since the ***pēpi-pod*** has been out. Get the update through Plunket or newsletters. Will pass it on to sister in law, but I think she's out of the region.
- Using ***pēpi-pod*** has been very helpful, my baby looks comfy. I told all the new mums at church about it and I look forward to passing it on. Thank you for letting me use it.
- Awesome told everyone in my whanau. Will be giving the ***pēpi-pod*** to my whanau.
- Friends and family outside our area were very interested in ***pēpi-pod*** and were giving a lot of good feedback.
- Choice. All good. Will recommend it to whanau. I will be giving it to one of my friends who is due in 3 months.

Suggested improvements (N=17)

- It needs handles on all four sides.
- It should have a cover that shades the head.
- Needs more padding.
- Not good when other siblings are around-under 6yrs.
- Takes up a lot of room in the bed.
- Too big to have in a queen size bed.
- Does have a little crack, by the handle, uncertain with its condition.
- Plastic can't breathe.
- Important to air the mattress every day.
- Be nice if it was a woven wahakura,
- Would prefer harakeke instead of plastic, but it is convenient to use for the short term and early term of my baby life.
- I think the ***pēpi-pod*** could work for some people but my baby just won't sleep in it. Baby also get very sweaty so I had to put extra wool blankets underneath which meant there was effectively no side on it so baby could have fallen out.
- Only negative is the hard sides. Sometimes she bruises her arms if she hits the top of sides whilst moving in her sleep.
- Colour of cover too dark too harsh.
- Looks like a coffin a little.
- Great alternative, thought the mattress should be thicker.

- The ***pēpi-pod*** is a great idea for bubs safety but I found it too big to have in a queen size bed as well as two adults I think if it was shortened a bit it would make a difference and also padded on outside but I'm glad there is organisations out there that help. Thank you.
- Someone said it was not good that it is a plastic box because it doesn't let air in.

Accidents and incidents

- Granddad sat on it. Baby wasn't in it and it wasn't damaged.
- Baby was in the pod on the floor. As he is getting bigger and moves a lot in his sleep he moved and the pod tilted/tipped slightly
- Sharp edge when baby lifts her head and drops against it on her lips. Plastic no good.
- Older sibling lent on the side and almost tipped baby out.
- Older sibling tried to carry baby while in ***pēpi-pod*** and dropped it.

Competing interests: None known. Neither Stephanie Cowan nor Change for our Children Limited benefit financially from the distribution of ***pēpi-pod*** sleep spaces. The components of the sleep spaces are assembled by Change for our Children Limited from goods provided at subsidised prices from a range of New Zealand companies. The sleep spaces are provided to health services on a 'cost recovery for materials only' basis.

Acting on professional advice, and given the life-protecting purpose of the *programme*, the ***pēpi-pod*** mark has been registered with the Intellectual Property Office of New Zealand to protect the quality and integrity of the complete programme (education plus sleep space) and assure the public of a consistent standard of goods, services and care.

Author information: Stephanie Cowan is director of Change for our Children Limited, Christchurch, a social innovations company seeking fresh solutions to infant health concerns that are more resistant to change from traditional approaches.

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