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Victorian Injury  
Surveillance System  
Monash University  
Accident Research Centre



VicHealth

*This edition of Hazard is an update of a larger study undertaken by MUARC for the Consumer Affairs Division of the then Department of Industry, Science and Tourism. The major purpose of the study was to provide information on the hazards associated with nursery furniture and potential solutions in order to underpin an injury reduction program in this area.*

# Nursery Furniture Injuries

Wendy Watson\*, Virginia Routley, Joan Ozanne-Smith

It has been estimated that there are at least 6,540 medically treated injuries annually associated with nursery furniture in Australia. Of these, at least 540 (8.3%) result in hospital admission. The major nursery furniture products associated with injury were found to be prams, cots, high chairs, baby walkers, strollers, change tables and baby exercisers (bouncers). Cots, both in Australia and the US, were most commonly associated with death, whereas baby bouncer (exercisers) and high chair injuries were the most likely to be admitted to hospital.

Eighty-four percent of nursery furniture injuries occurred to children aged under two. The most frequent injuries were bruising, inflammation and swelling (31%), lacerations (16%) and concussion

(11%). Injuries to the head and face represented 64% of injuries, reflecting that the majority of nursery furniture injuries result from falls and babies and toddlers are 'top heavy'.

The proportion of baby walker injuries has dropped from 19% of total nursery furniture injuries in 1989 to 10% in 1996-97, at a sample of Victorian hospitals. Such injuries are more frequent in Queensland where homes more commonly have steps/stairs and in the US.

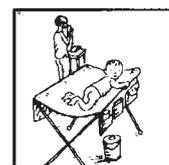
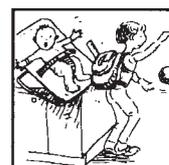
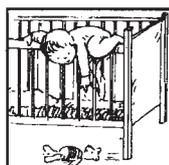
There is currently no Australian/New Zealand standard for change tables. The voluntary standard for prams and strollers is under review. Australian/New Zealand standards for high chairs and baby walkers are currently being developed.

The ISO/IEC Guide 50 "Safety aspects – Guidelines to take child safety into account in standards" is likely to be adopted in Australia/New Zealand.

In 1999 the Infant Nursery Product Association of Australia intends to introduce a code of practice which sets out minimum safety and performance criteria for a basic range of nursery products. The publication 'Keeping Baby Safe. A guide to nursery furniture' includes checklists to assist with purchase and advise on use. Publications which cover the new mandatory cot standard are also available.

Recommendations refer to standardisation, data collection, research and evaluation and dissemination of information.

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## Introduction

The larger MUARC study on which this report is based involved a review of recent Australian and international literature on nursery furniture safety; an overview of nursery furniture injury issues and standards and, to the extent possible, a summary and analysis of national and international data. The literature, data and development of standards have been updated for this edition of Hazard, with the focus on emergency department data.

## Data Overview

### Death data

A search of the Victorian Consultative Council on Obstetric and Paediatric Mortality and Morbidity data (1985 to 1988 inclusive) (Ozanne-Smith & Heffernan, 1990) and the Victorian Coroner's Facilitation System (1989/90-1994/95) revealed 15 deaths related to nursery furniture. Eleven were associated with cots and their environs, and single deaths related to a stroller, pram, change table and high chair.

Of the cot-related deaths, seven children strangled or suffocated as a result of the cot design or modification, including one whose clothing was caught on a wing nut. Another three children were strangled, two as a result of accessing blind or curtain cords and the other by accessing elastic attached to a toy. One child fell from the cot into a clothes basket and suffocated.

As yet unpublished reports include more recent cot-related deaths such as a portable cot collapsing onto the child when the locking device had not been securely engaged, and a further pram related death.

The relatively high injury mortality associated with cots is consistent with overseas reports (de Graaf, 1987; NEISS, US CPSC data) and further emphasises cot-related injuries as an important target for injury prevention. United States data suggests that cots are associated with nine times as many deaths as any other single nursery furniture product (Death Certificate Files, 1989-93, US CPSC). As

**Nursery furniture injuries by product and severity**

**Table 1**

Product	N	% Admitted
Prams	285	15.4%
Cots	252	17.1%
High chairs	212	21.6%
Baby walkers	205	13.2%
Strollers	175	18.9%
Change tables	111	17.1%
Bouncers	83	32.5%
Total	1323	17.5%

Source: VISS (1988-96), % admitted for all injuries (0-4 yrs) = 18.9% (0yrs=20%, 1yr=20%, 2yrs=19.3%, 3yrs=17.5%, 4yrs=17.1%).

**Nursery furniture product by age of injured child**

**Table 2**

	<1 year		1 year		2 years		3 years		4 years		Total 0-4 years of age	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Prams	157	(55)	87	(30)	25	(9)	8	(3)	8	(3)	285	(100)
Cots	86	(34)	106	(42)	42	(17)	10	(4)	8	(3)	252	(100)
High chairs	85	(40)	83	(39)	33	(16)	6	(3)	5	(2)	212	(100)
Baby walkers	174	(85)	26	(13)	2	(1)	3	(1)	0	(0)	205	(100)
Strollers	60	(35)	72	(41)	31	(18)	9	(5)	2	(1)	175	(100)
Change tables	76	(68)	21	(19)	12	(11)	2	(2)	0	(0)	111	(100)
Bouncers	75	(90)	3	(4)	2	(2)	3	(4)	0	(0)	83	(100)
<b>Total</b>	<b>713</b>	<b>(54)</b>	<b>398</b>	<b>(30)</b>	<b>147</b>	<b>(11)</b>	<b>41</b>	<b>(3)</b>	<b>23</b>	<b>(2)</b>	<b>1323</b>	<b>(100)</b>

Source: VISS (1988-96)

a result of deaths there have been recent product recalls for specific models of cots and playpens, particularly in the US.

### Emergency Department data

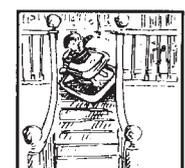
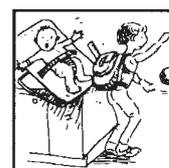
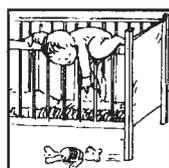
An analysis of the VISS database (1988-1996) (Box 2 page 13 ) revealed that 54% of the 1,323 reported nursery furniture injuries to children under five years were to males and 18% were admitted to hospital. The major nursery furniture products associated with injury were: prams, cots, high chairs, baby walkers, strollers, change tables and baby exercisers (bouncers). An examination of cases by severity of injury leads to a different ranking of products from that based on frequency (Table 1). Baby bouncers (exercisers) and high chairs had admission rates higher than for the all injury age-group into which their cases mostly fell (Tables 1 and 2).

Eighty-four percent of nursery furniture injuries occur to children under two years

of age. Most injuries associated with bouncers (90%), baby walkers (85%), change tables (68%) and prams (55%) occur in the first year of life. Injuries related to cots, high chairs and strollers are more evenly spread across the first two years (Table 2).

### Type and severity of injury

The most common injuries associated with nursery furniture products in the 0-4 year age-group were bruising, inflammation and swelling (31%), followed by lacerations (16%) and concussion (11%) (Table 3). Injuries to the head and face represent the highest percentage of injuries in this group (64% in total). This reflects the fact that babies and toddlers are 'top heavy' and the majority of nursery furniture injuries result from falls. Injuries to the upper limbs are also prominent at 15% of all injuries associated with nursery furniture (Table 4).



## Nursery Furniture Product by Nature of Injury

Table 3

Nature of Injury	Prams	High chairs	Cots	Baby walkers	Strollers	Change tables	Bouncers	TOTAL	% of total injuries
Bruising/inflammation/oedema/haemorrhage	119	82	56	75	58	38	26	454	31.3
Cuts/lacerations	49	34	43	37	48	12	4	227	15.6
Concussion	36	39	21	19	14	18	16	163	11.2
Fracture	19	21	41	6	12	14	8	121	8.3
Superficial abrasions	27	9	6	20	25	4	6	97	6.7
Burns	7	11	9	42	14	0	3	86	5.9
Poisoning	4	7	22	7	1	2	2	45	3.1
Sprain/strain	11	0	11	4	7	3	2	38	2.6
Crushing	4	4	3	6	4	1	0	22	1.5
Dislocation	5	2	9	0	2	1	1	20	1.4
Foreign body	2	0	7	0	2	2	2	15	1.0
Dental	5	1	3	2	3	0	0	14	1.0
Bites/punctures	2	0	5	1	1	2	1	12	0.8
Amputations	3	0	0	2	2	0	0	7	0.5
Asphyxiation	0	1	1	0	0	0	1	3	0.2
Unspecified/no injury	21	22	32	13	6	18	16	128	8.8
<b>TOTAL</b>	<b>314</b>	<b>233</b>	<b>269</b>	<b>234</b>	<b>199</b>	<b>115</b>	<b>88</b>	<b>1452</b>	<b>100</b>

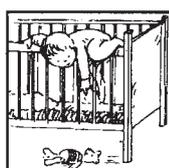
Source : VISS (1988-96). Note up to 3 injuries can be recorded per case.

## Nursery Furniture Product by Body Part Injured

Table 4

Body part	Prams	High chairs	Cots	Baby walkers	Strollers	Change tables	Bouncers	TOTAL	% of Total Injuries
Face	155	89	74	126	108	34	28	614	42.3
Head	76	70	35	28	35	36	28	308	21.2
Upper extremities	43	29	60	42	30	12	6	222	15.3
Lower extremities	10	8	29	8	15	7	3	80	5.5
Poisoning	4	7	22	7	1	2	2	45	3.1
Trunk	2	5	9	10	3	4	2	35	2.4
Internal organs	1	2	4	0	1	1	2	11	0.7
Neck	2	1	2	1	0	1	0	7	0.5
Asphyxiation	0	1	1	0	0	0	1	3	0.3
No injury detected/specified	21	22	32	12	6	18	16	127	8.7
<b>TOTAL</b>	<b>314</b>	<b>234</b>	<b>268</b>	<b>234</b>	<b>199</b>	<b>115</b>	<b>88</b>	<b>1452</b>	<b>100.0</b>

Source : VISS (1988-96). Note up to 3 injuries can be recorded per case.



## Individual nursery product data

Detailed examination of injuries in the VISS database associated with nursery furniture products is discussed below. The VISS database has been superseded from 1996 by a statewide Victorian Emergency Minimum Dataset (VEMD).<sup>1</sup> Updates using VEMD data are included, where relevant, for individual nursery furniture products.

### Prams (n=285)

The majority of cases (55%) were aged under one year. Sixty-three percent were male.

The most common cause of injury was falls (74%). Of these cases, about 23% could be attributed to the pram tipping

## Prams - Cause of Injury

Table 5

Cause of pram-related injury	N	%
Fell out of pram or fell backwards or forwards in pram	211	74.0
<i>Pram tipped over/fell backwards or forwards</i>	(31)	(10.9)
<i>Pram rolled (including rolling downstairs/ off porches)</i>	(18)	(6.3)
<i>Buckle/strap/bar broke / jammed/came undone</i>	(7)	(2.5)
<i>Pram collapsed/disassembled/base dislodged going down stairs</i>	(6)	(2.1)
<i>Pram broke</i>	(1)	(0.4)
Body part caught in pram	11	3.9
<i>Pram collapsed/folded up, crushing finger in frame</i>	(2)	(0.7)
<i>Closed pram on arm while altering position</i>	(1)	(0.4)
Child in pram hit by car	4	1.4
Other*	59	20.7
<b>TOTAL</b>	<b>285</b>	<b>100.0</b>

\* Includes climbing into pram and falling; falling and hitting body part on pram; sunburn whilst in pram

Source: VISS (1988-96)

## In-depth investigations

(George Rechnitzer, MUARC, Dec. 1998)

The deaths of three infants left in pram/stroller units have highlighted the need for improvements to design standards and ongoing scrutiny of product performance. In each of the incidents the infant was left sleeping in the unit, and the cause of death identified as asphyxiation. Two cases involved the same model pramette (convertible pram/stroller) unit, the first case occurred at a regional Hospital in Victoria in 1994 and the second at a private residence in NZ. In both of these cases the fabric mattress on the adjustable backrest of the pram was not adequately secured to the frame and could inadvertently (and unknown to the user) come loose. This allowed the backrest to lose support and tip down, resulting in the baby sliding down head first into the fabric sleeve so formed. A recent case involved a pramette unit where a rear flap was unclipped, which apparently enabled the infant to move backwards, resulting in instability and the pram tipping rearwards trapping the infant.

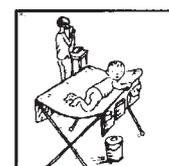
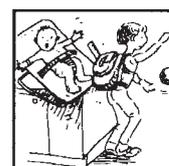
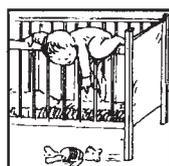
The first two cases have resulted in the international manufacturer recalling the units and retrofitting a design countermeasure. The later case resulted in the manufacturer adding to new models a non-removable sleeve to the backboard.

As a result of the in-depth investigation of these cases (including Coronial Inquests), amendments to AS/NZS 2088 Safety of Prams and Strollers are intended to overcome this type of incident by precluding the use of loose fittings, and requiring testing to help ensure designs which prevent entrapment and possible strangulation/ asphyxiation.

Other issues regarding the design and testing of pram and stroller units, and the need for the Standards to be mandatory, have also been identified from these incidents, and will be presented in a pending Coronial Inquest in Victoria.

For example current pram/stroller performance tests in Australia utilise a wooden cylinder as a test dummy. Although this may be useful for general load tests, it does not provide any 'bio-fidelity' as regards an actual baby or infant. It is suggested that some type of simple, appropriately bio-fidelic dummy be developed and specified for use by manufacturers of products such as prams and strollers (and other similar nursery equipment/furniture) to aid in the proper appraisal of such items.

<sup>1</sup> The electronic VEMD data collection commenced in October 1995 and superseded the original VISS paper based collection. There were a total of 449 cases of nursery furniture injury recorded at 21 of the 25 VEMD hospitals (page 15) serving paediatric communities over the period 1996 and 1997, representing 1.5% of all injuries in the 0-4 age group. Overall age and sex distributions are similar, with some minor variation by product. For all products greater proportions were caused by falls (92% VEMD falls v 65% VISS). Other causes eg product failure were rarely noted. The generally poorer quality of narratives (ie less detail) would partly explain non-fall causes of injury not being identified or there is a real reduction in non-fall injuries such as entrapment. The admission rate was considerably less for VEMD (7.6%) than VISS (17.5%) overall and for all nursery furniture types. This can perhaps be explained by the fact that the Royal Children's Hospital (RCH) represented 60% of VISS cases (38% VEMD). Being the specialist children's hospital RCH had more severe cases (reflected in its high proportion of VISS admissions – 25% RCH presentations admitted v 12% for other VISS hospitals). The VISS emphasis was on collecting at least 85% of all presentations, including all admissions, which may have distorted the true percentage of presentations admitted (as reflected by the RCH VISS admission rate of 25% versus its 7% admission rate for VEMD).



over or rolling off stairs or verandahs. The 11% of all injuries due to the pram tipping over suggest problems with stability. About 4% of cases involved part of the child's body being caught in the pram, suggesting entrapment problems in pram design. Overall, about 6% of narratives identified a failure on the part of the product as the reason for the injury incident (Table 5).

The most common injuries associated with prams were bruises and inflammation (38%), followed by cuts and lacerations (17%), then concussion (11.5%). There were 3 finger amputations. Seventy-four percent of all injuries sustained were to the head and face with a further 14% affecting the upper limbs. Just over 15% of all injuries associated with prams resulted in hospitalisation.

### Prams Update

There were 122 cases of injury associated with prams in the VEMD data.<sup>1</sup> A larger proportion of injured children were aged under one year for VEMD (89%) than VISS (55%) and a larger proportion were caused by falls (86% VEMD v 74%

## Cots - Cause of non-fatal injury

Table 6

Cause of cot-related injury +	N	%
Fell out of cot (whilst climbing out/standing/jumping/ sleeping/playing)*	118	46.8
Poisoning (access from cot or given by sibling)	22	8.7
Outside cot, hit against cot	17	6.7
Caught body part in cot (finger/arm/leg/foot/penis/body) #	14	5.6
Fell whilst in the cot and hit body part	14	5.6
Incorrectly lifted from cot by parent /sibling	9	3.6
Ingested object (access from cot or given by sibling)	9	3.6
Inside cot, hit against cot (non-fall)	4	1.6
Climbing into or on cot	7	2.8
Accessed hot water	3	1.2
Swallowed screw from cot	1	0.4
Portable cot folded up	1	0.4
Other	33	13.0
<b>TOTAL</b>	<b>252</b>	<b>100</b>

+ Includes 10 cases involving portable cots.

\* Includes one case where the side of the cot fell down when the cot was shaken

# Either caught in between rails, between mattress and rail, or caught in hinges, catches and joints.

Source: VISS (1988-96).

VISS). Lower proportions of VEMD cases, in comparison to VISS, were admitted to hospital (7% v 15%). The nature of pram injuries were mostly similar for both databases, however there

were more intracranial injuries (27%) in VEMD than in the concussion subset for VISS (12%) and more fractures in the VEMD (11%) compared with VISS (6%).

## Report on Household Cot surveys

(Margaret Barry, ACCC 1998)

Following the introduction of the mandatory standard for household cots two surveys have been undertaken, in Brisbane and NSW.

In Brisbane 24 styles of new cots were surveyed by the Australian Consumer Competition Commission (ACCC) and four of these were found to seriously breach the standard. These four styles of cots have now been withdrawn from sale.

Other breaches of a more minor nature were also identified, e.g. missing swing tags, insufficient information on swing tags. ACCC staff immediately corresponded with traders and manufacturers resulting in the majority of these breaches being rectified. Another problem noted by staff was that incorrectly sized mattresses were placed in cots on display and, when this problem was raised with the stores, it was found they did not have the recommended sized mattresses in stock. ACCC officers dealt with this matter on the day of the surveys.

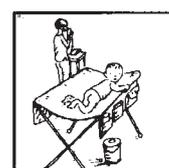
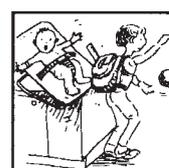
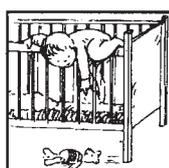
The NSW Office of Fair Trading initiated a compliance program throughout NSW, focusing on educating suppliers of new and second-hand cots of the Standard requirements.

A survey by this department found a generally high level of compliance among suppliers of new cots. The majority of these displayed a standards mark. This was also the case with suppliers specialising in the sale of second hand nursery furniture, with most having received advice from the NSW Department. Others were nevertheless familiar with requirements through the industry or the media.

The area of most concern for the Department was with the suppliers of general household second hand furniture and antique stores. These suppliers generally were unaware, or did not understand the scope, of the new requirement and had dangerous cots readily available for sale.

The survey was only conducted at major regional centres and, while it provided a good and consistent indication of cots that are available for supply, it also showed that a number of dangerous cots are being supplied throughout NSW by secondhand household furniture and antique stores.

The Department intends contacting charitable organisations and local councils about the secondhand cots and cots retrieved from landfill areas which are being recycled.



## Cots (n=252)

The majority of cases were aged under two years (76%), with most (42%) aged one year. Fifty-four percent were male. The main cause of injury associated with cots was the child falling out (almost 47% of cases). This contrasts with accidental deaths, all of which involved asphyxiation (page 2).

There were at least 18 cases (over 7%) identified in the one-line case narratives which indicated that a failure of the product or its design was the direct cause of injury to the child. These included 14 cases of entrapment. In at least one of the falls cases, the injury was due to a failure by the cot (the side fell down when shaken by the child). There was also a case where a portable cot collapsed and one in which a screw was accessible to, and subsequently swallowed by, a child (Table 6).

Further research is necessary to determine the role of cot design in children getting out of cots and either falling or, accessing and, ingesting dangerous substances. Bruising and inflammation were the most common cot-related injuries (21%) followed by cuts and lacerations (16%), fractures (15%) and concussion (8%). Poisoning was also prominent at 8%. The most commonly injured parts of the body were the head and face accounting for 40% of all recorded injuries, followed by the upper limbs (22%). Seventeen percent of injuries associated with cots, presenting to emergency departments, were admitted to hospital.

## Cots update

For the 59 cases of cot related injury recorded on the VEMD<sup>1</sup> (1996-97) age and sex distributions were similar to VISS cases. Falls were the cause of injury in 81% of VEMD cases compared with 47% of VISS cases. Intracranial injuries were the most common injury recorded on the VEMD (21%) compared with only 8% concussion for VISS. Superficial injuries were only 13% VEMD versus 21% for bruising and inflammation for VISS. Only 2% of VEMD cases compared with 17% of VISS cases required hospital admission.

## Cot standard

A welcome recent development is the mandation of the standard for children's cots (both new and secondhand), effective from the 30<sup>th</sup> June 1998 (AS/NZS 2172-1995). Details are available from Consumer Affairs Division, Dept of the Treasury (see Community Resources section, page 13). The Standard addresses the problems of entrapment, suffocation, sharp edges and protrusions, low or flimsy drop-side railings and inadequate instructions and labelling. It also requires warnings regarding hazards in the cot environs.

## High chairs (n=212)

Seventy-nine percent of cases were aged under two years with just over half of these aged less than one year, 55% were male.

The main cause of injury was falls, accounting for over 76% of all injuries associated with high chairs. A further 6% of cases involved children accessing hot or dangerous substances from the high chair. Of the four cases of entrapment recorded, three involved fingers being caught in part of the chair, while the other involved a child sliding under the tray and being caught and almost asphyxiated. In 8% of cases, the narrative attributed the incident to a failure of the product (Table 7).

The most common injuries sustained were bruising and inflammation (35%), followed by concussion (17%), cuts and lacerations (16%) and fractures (9%). The face and head sustained the most injuries (68%) followed by the upper extremities (12%). Almost 22% of injuries associated with high chairs presenting to hospital emergency departments were admitted (about 3% above the average for the 0-4 age-group).

## High chairs update

There were 90 cases of high chair related injuries recorded on the VEMD.<sup>1</sup> Age and sex distributions were similar to the VISS database. Falls accounted for a higher proportion of injuries (94% VEMD v 76% VISS). Fractures were more common on the VEMD (16%) than in VISS (9%).

## Baby walkers (n=205)

The great majority of cases involved children under one year of age (almost 85%); 54% were male.

An analysis of case narratives indicated that the majority of injuries occur when children move into dangerous situations in the walker (Table 8). Two thirds of all injuries associated with baby walkers were due to falls. Fifty-seven percent of these recorded a fall down stairs or off a

## High Chairs - Causes of Injury

Table 7

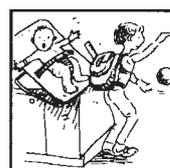
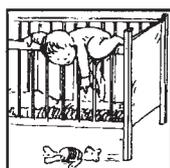
Cause of high chair-related injury	N	%
Fell out of high chair*	162	76.4
<i>Front tray fell off/came undone/collapsed/pushed off</i>	(12)	(5.7)
<i>Chair wasn't put together properly</i>	(1)	(0.5)
Accessed hot liquid/medication etc whilst sitting in/climbing up on high chair	12	5.7
Body part caught in high chair**	4	1.9
Strap holding base of high chair gave way	1	0.5
Attachable high chair came off when child wriggled	1	0.5
High chair tipped over	1	0.5
Other #	31	14.5
<b>TOTAL</b>	<b>212</b>	<b>100</b>

\* Includes cases where child stood up, climbed out or jumped out.

\*\* Includes three cases of fingers being caught in high chairs, and one case where the child slid under the tray, got stuck and stopped breathing.

# Includes cases where children playing near high chairs knocked themselves on the chair, and children trying to climb up on high chairs pulled the chair onto themselves.

Source: VISS 1988-96



## Baby walkers - Causes of Injury

Table 8

Cause of baby walker-related injury	N	%
Fell*	137	66.8
<i>Fell down steps/off verandah</i>	(78)	(38.0)
<i>Baby walker tipped over - inc. 8 cases where walker caught on rug/carpet/object on floor</i>	(26)	(12.7)
Accessed hot liquid/heater/oven whilst in baby walker	31	15.1
Caught fingers in door	11	5.4
Ingested poison	8	3.9
Pulled or knocked item onto self	8	3.9
Other	10	4.9
<b>TOTAL</b>	<b>205</b>	<b>100.0</b>

\*Some falls were caused by the baby in the walker going through a front door, falling out of doorways (etc), but no mention of steps was made.

Source: VISS 1988-96



verandah. Another 19% of fall injuries occurred when the walker tipped over, raising issues about the stability of the product even on flat surfaces. In a further 19% of all cases the child in the walker was in a variety of dangerous positions including accessing hot appliances or liquids, resulting in burns or scalds, or ingesting a dangerous substance.

While bruising and inflammation were the most common injuries sustained (32%), 18% of injuries were burns or scalds, 16% cuts and lacerations and 8% concussion. There were 3 finger amputations. Sixty-six percent of all injuries occurred to the face and head with a further 18% to the upper limbs.

The admission rate for injuries associated with baby walkers (13%) is lower than that for all under two year olds (20%).

### Baby walkers update

There were 36 cases of baby walker injuries recorded on the VEMD.<sup>1</sup> The age and sex distributions for these cases were similar to VISS. A larger proportion of VEMD baby walker injuries were due to falls (89% v 67% VISS), however similar proportions fell down stairs. As with other nursery furniture injuries a lower proportion of VEMD cases were admitted to hospital (6%) compared with VISS cases (13%). There were greater proportions of injuries to the head recorded on the VEMD (74% v 66% VISS), and less to the upper limbs (6% v 18% VISS).

### Prevention

A halving of babywalker injuries between 1992 and 1997 in the United States could be attributed to activities by the Consumer Product Safety Commission (CPSC) and other bodies in regard to a voluntary safety standard which has since been strengthened. Safer baby walkers on the market are specifically designed to prevent falls down stairs and/or are too wide to fit through standard doorways (Consumer Product Safety Review, Summer 1998). A safe alternative being marketed is a stationary activity centre. In 1992 the (CPSC) calculated the cost of U.S. baby walker injuries to be \$250 million, associating each babywalker with societal

costs of \$60 for falls down stairs. A safer, albeit more expensive babywalker was therefore justifiable. This economic argument was used in advocating safer baby walker standards (Consumer Product Safety Review, Summer 1998).

An Australian/NZ standard based on the US ASTM standard was recommended in the MUARC 1997 report and many subsequent forums in Australia and NZ. Most recently, the NSW Fair Trading Minister, as part of a National Day of Action to highlight baby walker injuries, made a similar recommendation (N.S.W. Dept. Fair Trading, 1998).

Standards Australia is currently developing a baby walker standard in response to these developments.

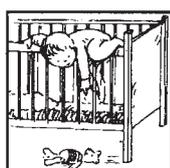
### Strollers (n=175)

Seventy-six percent of VISS cases were children aged less than two years and 48% were male. Again, the most common cause of injury was falls (63% of cases). Almost 5% of cases involved the stroller tipping over, suggesting problems of stability and about 7% of cases involved entrapment of a body part in the stroller. In at least 4% of cases, the cause of injury was attributed to a failure (eg. collapse) by the stroller (Table 9).

The most common injuries associated with strollers were bruises and inflammation (29%) and cuts and lacerations (25%). There were 2 finger amputations. Seven percent of cases sustained concussion. Eighty-two percent of injuries sustained were to the face and head with a further 17% affecting the upper limbs. Nearly 19% of cases presenting to emergency departments required hospitalisation.

### Strollers update

Of the 42 VEMD<sup>1</sup> cases of injury associated with strollers, a greater proportion of injured children were male and aged under 2 years than for VISS. Also the VEMD recorded a greater proportion of falls (74%) compared with VISS (63%). Greater proportions of injuries recorded on the VEMD were intracranial (24%) compared with the VISS subset of concussion (7%). Seven



## Strollers - Cause of Injury

Table 9

Cause of stroller/pusher-related injury	N	%
Fell out of stroller or stroller tipped over	111	63.4
<i>Stroller rolled (including rolling down stairs/off porches)</i>	(9)	(5.1)
<i>Stroller tipped over/fell backwards or forwards</i>	(8)	(4.6)
<i>Seat not connected properly</i>	(1)	(0.6)
<i>Stroller collapsed going down stairs</i>	(1)	(0.6)
Body part caught in stroller	12	6.9
<i>Stroller collapsed/folded up, crushing finger in frame</i>	(5)	(2.9)
<i>Closed stroller on arm while locking arms of pusher</i>	(1)	(0.6)
Child in stroller hit by car	7	4.0
Other*	45	25.7
<b>TOTAL</b>	<b>175</b>	<b>100.0</b>

\* Includes climbing into stroller/pusher and falling; falling and hitting body part on stroller/pusher; sunburn whilst in stroller.  
Source: VISS 1988-96

## Change Tables - Cause of Injury

Table 10

Cause of change table-related injury	N	%
Fell off change table*	86	77.5
Sibling pulled child off change table	2	1.8
Body part caught between legs of table	2	1.8
Playing under change table, got steel spring from table in eyes	1	0.9
Climbed on change table to reach medicine	1	0.9
Other**	19	17.1
<b>TOTAL</b>	<b>111</b>	<b>100.0</b>

\* Includes one case where a baby was having his nappy changed in a plane during take off.  
\*\* Other includes cases where children were playing near change tables and fell, hitting a body part on the table.  
Source: VISS 1988-96

percent of VEMD cases were admitted compared with 19% for VISS.

### Change tables (n=111)

The majority of injuries occurred to children under the age of one year (68%) and were due to falls (76%) when the baby rolled off the table onto the floor or onto another piece of furniture (Table 10). Fifty-two percent were female. The most common injury was bruising (33%), followed by concussion (16%) and fractures (12%). Over 60% of injuries were to the head and face and 17% of injuries associated with change tables resulted in hospitalisation.

### Change tables update

There were 84 VEMD<sup>1</sup> cases of injury associated with change tables. A greater proportion occurred to children aged under one year (88% VEMD v 68% VISS). The VEMD also had a greater proportion of cases attributed to falls (90% VEMD v 76% VISS). Smaller proportions of injured children were female (36% VEMD v 52% VISS) and were admitted to hospital (7% VEMD v 17% VISS). The VEMD recorded a greater proportion of intracranial injuries (27%) than the VISS concussion subset (16%).

## Baby bouncers (exercisers) (n=83)

Over 90% of injured children were aged under one year, and 54% were male. Most injuries occurred when babies fell from or in the bouncer (43%). Most of these falls (75%) occurred from a height, as the bouncer had been placed on a bench-top, table or similar. In a further 5% of cases, the baby fell while being carried in the bouncer. Another 17% of injuries occurred when the bouncer was on the floor and a person or object fell onto the baby (Table 11).

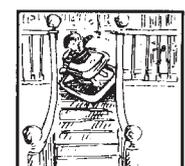
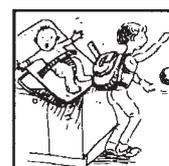
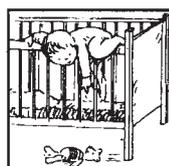
The main injury sustained was bruising (30%) followed by concussion (18%) and fractures (9%). Sixty-four percent of injuries were to the face and head. The percentage of admissions for injuries associated with bouncers is particularly high at 33%, about 1.7 times the admission rate for the under 5 age-group overall.

### Bouncers update

There were 16 cases of injury associated with bouncers recorded on the VEMD.<sup>1</sup> A greater proportion of injuries was associated with falls for the VEMD (88%) than VISS (43%). Half of the falls on the VEMD were from a bench top compared with 75% VISS from a bench top or similar. In 13% of VEMD and 5% of VISS cases the baby fell from the bouncer while being carried. The admission rate for VEMD cases was lower at 13% than VISS (33%).

### Trends

An analysis of data from three Melbourne metropolitan hospitals from which VISS collected data over a five-year period (1989-1993), plus routine VEMD data available for 1996 and 1997, indicates a change in the relative proportions of nursery furniture products associated with injury over that time (Figure 1). In particular, assuming proportions in the two data sets are comparable, the proportion of baby walkers has dropped from 19% of the total injuries associated with the products listed in 1989 to 10% in 1996-97. This downward trend began in 1991 and appears to have coincided



## Baby Bouncers - Cause of Injury

Table 11

Cause of baby bouncer-related injury	N	%
Fell/slipped out of bouncer <i>Fell from bouncer placed on table/bench, etc</i>	36 ( 27)	43.4 (32.5)
Object/person fell onto/tripped over baby in bouncer	14	16.9
Child dropped while being lifted from bouncer by parent/sibling	8	9.6
Ingested objects /poisons whilst in bouncer, mostly given by sibling	6	7.2
Fell from bouncer whilst being carried in it	4	4.8
Bouncer tipped over (whilst at floor level)	1	1.2
Caught toe in baby bouncer	1	1.2
Other*	13	15.7
<b>TOTAL</b>	<b>83</b>	<b>100.0</b>

\* Includes children tripping over bouncers.

Source: VISS 1988-96

with a strong intervention program to discourage the use of baby walkers which resulted in Coles-Myer withdrawing the product from sale in 1992. Other major retailers followed in July 1995, when they agreed to a voluntary ban on the product. The intervention program used injury surveillance data to inform public and professional education and has attracted considerable media attention over this period. Queensland has also experienced a decline in baby walker injuries at the hospitals in its emergency department injury collections declining from an annual average of 20 between 1988 and 1993 to 10 annually in recent years (QISU, personal communication, 1998).

Additionally the proportion of cases associated with change tables at the three Victorian hospitals appears to have risen from approximately 10% p.a. between 1989 and 1992 to 23% in 1997. There has been only a slight increase in Queensland data from an average of 14 cases p.a. (1988-92) to 16 in recent years. (QISU, personal communication, 1998). The reasons for the increase are not apparent and require further investigation.

### Data Comparisons

A comparison between the rankings of nursery furniture products from the

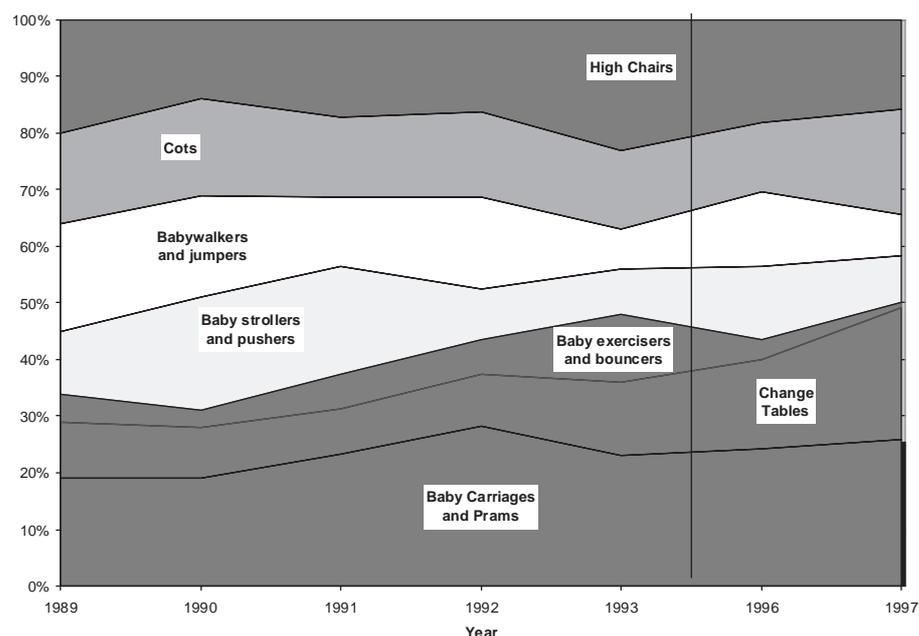
various state, national and international injury data sources is presented in Table 12. The variation in rankings may suggest different patterns of usage or changes over time (given the collections represent different time periods).<sup>2</sup>

A comparison between the VISS (Victorian) and National Injury

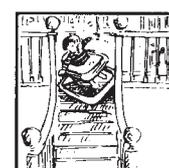
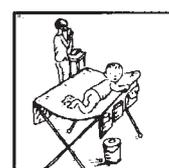
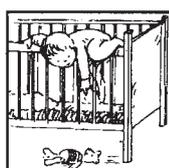
Surveillance Unit (NISU) (Australian) data was conducted to ensure that variations in nursery product rankings did not reflect essential differences in the demography of the two collections. As can be seen in Figure 2, the distribution of cases by age, for both the under five age-group and all nursery furniture injuries in this age-group, is almost identical. The percentage of hospital admissions is also very similar in both the under 5 age group (NISU = 18%; VISS = 19%) and in the nursery furniture injuries in this group (NISU = 17%; VISS = 19%) reflecting similar injury severity levels. It is important to note that the peak for nursery furniture-related injury occurs at age under one year (NISU = 55%; VISS = 54%) compared to all 0-4 years injuries which peak at age 1 (NISU = 27%; VISS = 28%). Given that the patterns appear to differ in the more recent statewide VEMD data in Victoria it is possible that VISS and NISU data both reflect the more severe cases of injury! A validation study is required to confirm the changed patterns in the VEMD data compared with VISS and NISU.

Nursery Product-Related Injuries 1989 to 1997 (excl. 1994-95)

Figure 1



Source: VISS - 1989-1993, VEMD - 1996-97. Royal Children's Hospital, PANCH, Western Hospital.



<sup>2</sup> Unless otherwise stated, injury rankings presented here represent association rather than a causal relationship.

**Comparison of Selected Product Ranking between Australian and International Emergency Department Data** Table 12

RANK	AUSTRALIA	VICTORIA	VICTORIA	SOUTH AUSTRALIA	QUEENSLAND	UNITED STATES	THE NETHERLANDS
	NISU (1986-94)	VISS (1988-96)	VEMD (1996-97)	(1994-)	QISU (Jul 1994-Dec 96)	NEISS (1995)	PORS (1991-95)
1	Baby walkers	Prams	Prams	Prams	Baby walkers	Baby walkers	Cots
2	High chairs	Cots	High chairs	Strollers	Change tables	Strollers	High chairs
3	Strollers	High chairs	Change tables	High chairs	High chairs	Cots	Prams
4	Prams	Baby walkers	Cots	Change tables	Prams & strollers	High chairs	Strollers
5	Cots	Strollers	Strollers	Baby walkers	Cots	Change tables	Baby walkers
6	Change tables	Change tables	Baby walkers	Baby exercisers	Baby exercisers	Prams	Change tables
7	Baby exercisers	Baby exercisers	Baby exercisers	Cots			

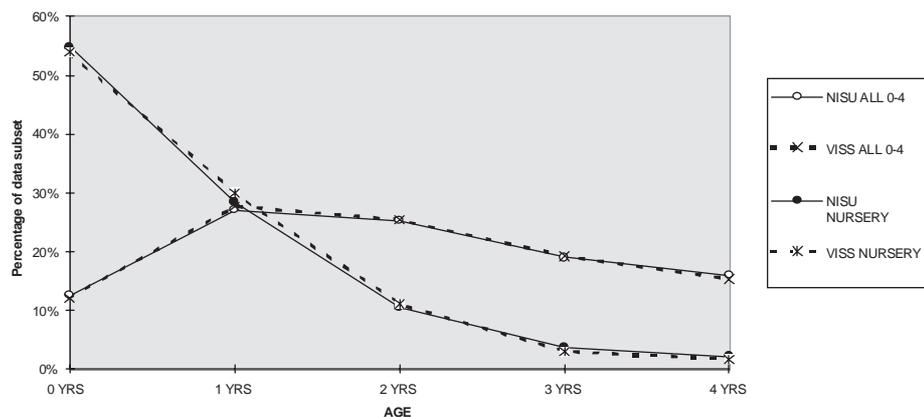
Note: Baby exercisers or 'bouncers' is not a category of nursery product recognised by The Netherlands Injury Surveillance System.

**Estimated annual number of injuries associated with nursery furniture in the 0-4 years age-group, Victoria & Australia (1993/94)** Table 13

AGE	VICTORIA						AUSTRALIA		
	FREQUENCY			RATES/100,000			FREQUENCY		
	admissions	non-hospitalised	TOTAL	admissions	non-hospitalised	TOTAL	admissions	non-hospitalised	TOTAL
0	67	811	878	105	1,275	1,380	270	3,268	3,538
1	44	439	483	68	688	756	176	1,772	1,948
2	16	162	178	25	255	280	64	657	721
3	4	48	52	7	75	82	18	195	213
4	3	26	29	5	41	46	13	107	120
0-4 yrs	134	1,486	1,620	42	466	508	541	5,999	6,540

Sources: VIMD, VEMD, VISS, ELVIS

**Comparison between NISU & VISS Data: All 0-4 Year and Nursery Furniture Injuries** Figure 2



Source: VISS 1988-96, NISU 1986-94

The ranking of baby walkers as a cause of injury in Queensland probably reflects the prevalence of highset homes in that state. All Queensland cases to date bar

one involved falls and nearly three quarters involved steps or stairs compared with only 38% in Victoria (QISU news sheet, Aug 1998).

**Australian nursery furniture-related injury rate estimate**

Data from VISS, the VEMD, the Victorian Inpatient Minimum Dataset (VIMD) and the Extended Latrobe Valley Injury Surveillance (ELVIS) were used to establish the estimated number of medically treated injuries occurring annually in Victoria associated with nursery furniture products. The derived figures were extrapolated to Australia on the basis of population figures.<sup>3</sup>

It was estimated that there are at least 6,540 injuries annually in the under five age-group associated with nursery furniture products that are treated in Australian hospital emergency departments or by general practitioners. Of these, it is estimated that at least 540 cases result in hospital admission. Over 3,500 of all injury cases are aged under one year and, of these, at least 270 result in hospital admission (Table 13).

**International Data**  
**U.S. (Consumer Product Safety Commission)**

There were an estimated 86,100 children aged under 5 years treated in U.S. hospital emergency rooms in 1995 for injuries associated with nursery products. The 1995 estimate is somewhat lower than estimates for the previous four years but the overall fluctuation in nursery product injury estimates is not statistically significant.

The low admission rate for U.S. hospital emergency departments (2.7% for nursery furniture-related injury versus 7.6% for VEMD and 4% for total injuries in this age group in the U.S. NEISS database versus 13% VEMD) suggests a somewhat different pattern of emergency department usage than that in Australia. The United States database has a higher percentage of nursery furniture cases in their first year of life, representing 69% of the under 5 age-group (59% VEMD, 54% VISS).

About 80% (69,200) of the US nursery furniture related injuries were to the head area, reported as head, face, mouth, eye and ear. Of these head injuries, 43,100



(about 62%) were diagnosed as contusions and abrasions or lacerations; about 20% were internal injuries,<sup>4</sup> and the few remaining victims with injuries to the head area had dental injuries. Other body parts frequently injured were the upper and lower limbs with 6,500 and about 3,600 injuries respectively. The leading cause of injury was falls.

The CPSC Death Certificate File for the years 1989 to 1993<sup>5</sup> had an annual average of about 64 deaths associated with nursery products, which is similar to the previous five-year annual average for 1988 to 1992. These deaths are not a statistical sample of known probability and do not include all nursery product-related deaths that may have occurred during the 1989-1993 period. They do, however, provide a minimum figure for average annual deaths associated with nursery products (CPSC, 1996a).

**The Netherlands Consumer Safety Institute (CSI)**

The Netherlands Injury Surveillance System (PORS) provided all-age annual estimates for the years 1991-95 for selected nursery furniture products as well as the proportions of injuries in each age and gender group from their sample. Using this data, an average annual estimate of the number of injuries associated with each product for children under 5 years was established. The estimated nursery furniture-related injury rate per 100,000 persons for this age-group was also established using mean population data supplied for the five year period.

There was an estimated annual average of 840 children treated in The Netherlands hospital emergency departments between 1991-95. Cots were associated with the

greatest number of injuries (271) in this age-group, followed by high chairs (85) then prams (62).

Given the apparent difference in hospital emergency department usage between Australia and the United States, the injury rate of 508 per 100,000 population for all medically treated nursery furniture injuries is not too dissimilar from the U.S. rate of 431.3 per 100,000 population (CPSC, 1996b) which applies to treatments in hospital emergency departments only. However, The Netherlands rate of 30.1 injuries per 100,000 population for emergency department treatment seems exceedingly low in comparison.

**Standards**

There is currently no Australian/New Zealand standard for change tables. The voluntary standard for prams and strollers is currently under review. Australian/New Zealand standards for high chairs and baby walkers are currently being developed.

Importantly, the International Standardization Organisation/International Electrotechnical Commission Guide 50 "Safety aspects – Guidelines to take child safety into account in standards" is likely to be adopted in Australia/New Zealand. This guide, which is expected to be finalised in early 1999, will address all product related hazards to children, whether or not the products are intended specifically for children.

**Development of an Industry Code of Safe Practice**

*(Ian Scott, Kidsafe, Dec 1998)*

Organisations concerned with child safety and those interested in product safety have long held the view that a range of simple measures would, if universally followed, substantially reduce the rate of child injury associated with nursery products. A strategy is underway to provide industry with the basic information on means of reducing the risk of injury and to increase the incentives for individual commercial enterprises to produce and sell products that incorporate safe design.

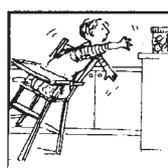
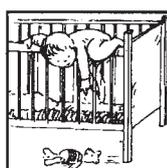
Kidsafe, with project funds from the Commonwealth Department of Health and Family Services, has been developing a draft code of safe practice with industry. The model code of practice will set out minimum safety and performance criteria for a basic range of nursery products. The requirements in the code will be informed by Australian and international research on injury and, for the most part, be based on national and international standards.

The Infant Nursery Product Association of Australia (INPAA) intends to introduce the Code in 1999, with compliance mechanisms and point of sale advertising in order to improve the ability of industry to produce well designed and safe products and to increase consumer awareness of the safer design features to look for. Part of the strategy involves increasing the commercial pressure on industry for incorporation of safe design. The Association has been increasingly concerned by preventable injury associated with nursery products both because it involves injury to children and because of the public and commercial implications of this and it has strongly supported the introduction of regulations requiring all cots to conform to the Australian Standard.

<sup>3</sup> All unintentional injury cases in the 0-4 year age-group admitted to Victorian hospitals in 1993-94 through emergency departments was used as the basis for these calculations. By applying admission ratios derived from the VEMD (Day et al, 1997) the number of non-hospitalised emergency department presentations can be estimated. Using the ratio of emergency department to general practitioner attendances derived from the ELVIS study, the number of non-hospitalised GP attendances can also be estimated to give the total number of non-hospitalised injury cases in this age-group. The percentage of nursery furniture injury admissions and presentations in the 0 - 4 age-group in the VISS database was then applied to the actual number of injury admissions (1993-94) and the estimated number of non-hospitalised cases to establish an estimate of the annual number of nursery furniture-related injuries. The injury rate was then derived from this figure which, when applied to age-specific Australian population figures, provides an estimate of the number of medically-treated injuries associated with these products Australia-wide. It should be noted that the injury rate for Victoria is somewhat lower than other States, so the estimate for Australia represents a minimum figure. Because of the variation in the proportion of products between the Victorian and the national data, no attempt has been made to estimate the injuries associated with individual products.

<sup>4</sup> Internal injuries reported include those cited as "head trauma", "closed head injury" or "blunt head injury".

<sup>5</sup> 1993 is the latest year for which the death certificate file is complete.



## Recommendations

### General

1. Further action should be taken by the Consumer Affairs Division, Dept. of Treasury and other responsible authorities to reduce deaths and injuries related to nursery furniture and resources should be allocated, where required to meet the recommendations which follow.
2. A general product safety directive should be adopted and enforced in Australia/New Zealand.
3. Research and evaluation studies should be commissioned, where necessary, to inform and monitor policy and action on product safety.

### Standardisation

4. A simple, appropriately biofidelic infant dummy should be developed (replacing a cylinder) and anthropomorphic data taken into account when developing safety standards.
5. Consideration should be given to developing a restraint standard common to all nursery furniture. Within the Standard various models of restraint could be specified. These could be referred to, where applicable, by other nursery furniture standards.
6. The current development of Australian /New Zealand voluntary standards on high chairs and baby walkers should be completed and released as soon as possible.
7. A Standard should be developed for change tables. No Australian/New Zealand standard exists. The Standard should be based on the best available international standards or draft standards.
8. Children's furniture safety standards should be reviewed and, if necessary, modified at least once every five years, to ensure that new requirements or revision of existing requirements occurs as new substantive information becomes available.
9. Compliance with voluntary nursery furniture standards should be

actively improved by measures such as: seeking industry co-operation, public education by means of media and hot-lines and a policy of mandation if necessary.

10. As in the United States, mandation of standards should occur in Australia where voluntary standards and the marketplace are ineffective in achieving compliance and it is warranted by evidence.
11. To avoid unacceptable "non-tariff" barriers to trade, Australia/New Zealand should focus initially on improving its safety requirements for nursery furniture in-line with other major importers of nursery equipment, particularly the United States.

### Injury data collection

12. Hospital based injury surveillance should collect product-related injury data in sufficient detail and sufficient numbers to provide useful in-depth analyses and reliable secular trend data. It should contain sufficient cases by state to allow comparisons to identify best practice and effective interventions. There is potential for state/Commonwealth collaboration for adequate numbers of cases to be collected.
13. Validation studies should be conducted to confirm trends in reported injury data.
14. Linkage of emergency department injury surveillance and hospital admission datasets should be undertaken to provide reasonably comprehensive information on moderate and severe injury cases (admissions).
15. The National Coroners' Information System (NCIS), currently under development, should identify products and their involvement in deaths.

### Research and evaluation

16. Household surveys should be undertaken to collect additional information with regard to nursery furniture and possibly other products

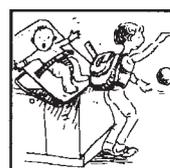
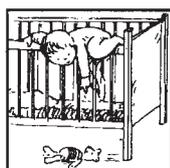
## Box 1

of interest. It is recommended that the surveys be undertaken collaboratively with other sectors or state departments interested in further exposure issues

17. Retail outlet observations of compliance of nursery furniture with Australian or overseas standards (where there are no Australian standards) should be conducted.
18. Studies should be undertaken to investigate second hand marketing. Compliance with standards, modifications to design, maintenance and general condition should be assessed.
19. In depth studies are required to conduct detailed tests of nursery furniture performance against test procedures, detailed in relevant standards, for current models in the market place.
20. A relative risk study should be undertaken for cots versus beds by age to determine the safest sleeping environment for children of different ages.
21. Follow-up case studies should be undertaken to determine whether child injuries associated with nursery furniture involve factors, which should be further investigated.
22. In-depth investigations should be undertaken for all deaths involving nursery furniture.
23. The effects of the introduction of new standards, and mandation of existing standards should be evaluated against injury data.

### Dissemination of information

24. Point of sale information about the correct use of products and the associated hazards should be provided for parents and care-givers.
25. Community service TV advertisements should be produced to alert parents and care givers to nursery furniture risks at the time of implementing preventive measures such as mandatory standards or new voluntary standards.



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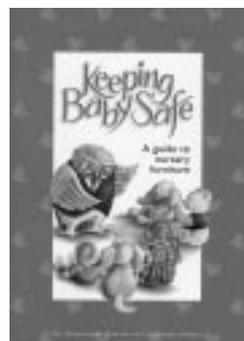
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## Acknowledgements

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## Community Resources

- Keeping Baby Safe. A guide to nursery furniture.* The publication includes checklists to assist with purchase and advise on use. It covers the nursery furniture items covered in this edition of Hazard plus bunk beds, toy boxes, cot and bed restraints and playpens and safety barriers. It is available electronically from the Ministerial Council on Consumer Affairs (MCCA) website: <http://www.consumer.gov.au/> and in booklet form from the Consumer Affairs/Fair Trading Ministers of each state and territory. The relevant phone numbers are: 03 9627 6820 (Vic), 08 8922 0868 (NT), 02 9895 0254 (NSW), 08 8204 9751 (SA), 07 3246 1560 (Qld), 02 6207 0400 (ACT), 1800 005 220 (Tas) and 08 9244 3753 or 08 9244 1192 (WA).



The booklet is also available from the Kidsafe National office ph: 03 9427 1008 and the Infant and Nursery Products Assoc. of Australia ph: 03 9762 4444. It can be downloaded from the MCCA website in several community languages: Arabic, Chinese, Croatian, Serbian, Spanish and Vietnamese. Another publication available from the same source is 'Safe Toys for Kids'.

- 'Making your baby's cot safe: facts for consumers' and 'Do you supply cots for retail or commerce? Facts for traders'. These cover the new mandatory cot standard and are available from the Consumer Affairs Division, Department of the Treasury. Ph: 02 6213 6091, Fax: 02 6213 6159 or email [consumeraffairs@dist.gov.au](mailto:consumeraffairs@dist.gov.au)

## Database Descriptions

### Box 2

### *Victorian Injury Surveillance System paper-based collection (VISS)*

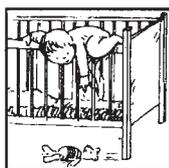
The VISS database recorded details of injuries treated at the emergency departments of the six VISS hospitals, five of which have a paediatric collection. The data is based on information provided by the injured persons (or their parent) and the attending doctor. The total number of cases in the database is approximately 165,000. Data collection began in each hospital at different times. The paediatric collection (under 15 years) is as follows: Royal Children's Hospital (4.1.88-31-12-93), Western Hospital (7.11.88-31.12.93), Preston and Northcote Community Hospital (11.11.88 – 31.12.93) and Latrobe Regional Hospital (1.7.91 – 30.6.96). Since VISS data are collected from clusters of hospitals rather than from the whole state, they are most useful in determining proportions of factors such as locations or products associated with injuries of various severities.

### *Victorian Emergency Minimum Dataset*

The electronic VEMD database records details of injuries treated at the emergency departments of 25 major public hospitals (see page 15). The total number of cases on the database to date (December 1998) is close to 500,000. The injury variables collected include injury cause, location, activity, nature of main injury, body region and human intent. This collection represents approximately 80% of statewide emergency department presentations.

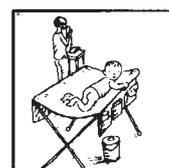
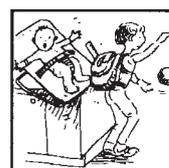
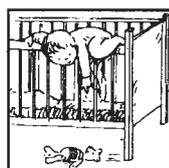
### *Coroners' Facilitation System*

The Coroner's Facilitation System is a database containing all unnatural deaths and is collated from the findings of the Victorian State Coroner. These include deaths that were unexpected, unnatural or violent, or which resulted from accident or injury.



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# General Acknowledgements

## Participating Hospitals

Alfred Hospital	Monash Medical Centre
Angliss Hospital	The Northern Hospital
Austin and Repatriation Medical Centre	Royal Children's Hospital
Ballarat Base Hospital	Royal Melbourne Hospital
The Bendigo Hospital Campus	Royal Victorian Eye and Ear Hospital
Box Hill Hospital	St Vincent's Hospital
Dandenong Hospital	Wangaratta Base Hospital
Echuca Base Hospital	Warrnambool and District Base Hospital
Frankston Hospital	Western Hospital
The Geelong Hospital	The Williamstown Hospital
Goulburn Valley Base Hospital	Wimmera Base Hospital
Latrobe Regional Hospital	
Maroondah Hospital	
Mildura Base Hospital	

## Coronial Services

Access to coronial data and links with the development of the Coronial Service's statistical database are valued by VISS.

## National Injury Surveillance Unit

The advice and technical back-up provided by NISU is of fundamental importance to VISS.



Recent issues of *Hazard*, along with other information and publications of the Monash University Accident Research Centre, can be found on our internet home page:

<http://www.general.monash.edu.au/muarc>

# How to Access VISS Data:

VISS collects and tabulates information on injury problems in order to lead to the development of prevention strategies and their implementation. VISS analyses are publicly available for teaching, research and prevention purposes. Requests for information should be directed to the VISS Co-ordinator or the Director by contacting them at the VISS office.

## VISS is located at:

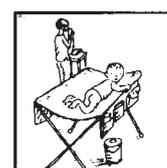
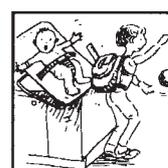
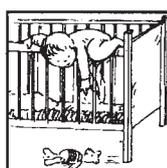
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