



Hazard
(Edition No. 26)
March 1996

Victorian Injury
Surveillance System
Monash University
Accident Research Centre



VicHealth

This edition of Hazard examines the new second generation of injury surveillance which supercedes the paperbased collection commenced in 1988. Also in this issue we address dog bites and other dog related injury and examine the implications of the new Domestic (Feral and Nuisance) Animals Act 1994.

VISS goes electronic: second generation injury surveillance

Graeme Watt*
Joan Ozanne-Smith

Summary

Since 1988, VISS has collected detailed injury surveillance data from clusters of Victorian public hospital emergency departments for the purpose of injury prevention. Information on almost 170,000 cases of injury has been collected. Progress towards electronic emergency department management systems and some limitations of the original system have necessitated the development of a second generation injury surveillance system in Victoria.

The injury component of the new dataset will be centralized to VISS, which will have responsibility for data quality control and the dissemination of injury data.

Conceptually injury surveillance data collection is required at 3 levels. A statewide data collection, using a nationally agreed injury surveillance minimum dataset, constitutes level 1. Data collection at this level commenced on 1 October 1995, and there are currently 25 Victorian public hospitals collecting data. The new electronic system could reasonably be expected to provide in excess of 250,000 cases each year. Provided the data is collected accurately, it will rank with the best in the world for epidemiological, evaluation and injury prevention purposes.

The original VISS database will remain a rich source of injury data during the transition phase to the new database. Research and information services will be maintained during the transition.

Also in this issue:

Dog Bites (pages 7 to 13)

More than 267 Victorians, mostly young children, are hospitalised annually from dog bites. A further 50 are estimated to be hospitalised due to other dog related injuries. Almost 80% of dog bites to children aged under 5 occur in a private home. Nineteen percent of bites to children and 41% of bites to adults occur in public places. This problem has persisted for some years.

On April 9 the *Domestic (Feral and Nuisance) Animals Act 1994* will be introduced in Victoria. The potential effects of the Act and other countermeasures are examined.



Brief history of the Victorian Injury Surveillance System (VISS) paper collection

Since 1988, VISS has collected detailed injury surveillance data from clusters of public hospital emergency departments for the purpose of injury prevention. Information on the almost 170,000 cases of injury has been collected from five participating hospitals on seven campuses in Victoria. This data has also been centralized as part of a national collection to the Australian Institute of Health and Welfare - National Injury Surveillance Unit (NISU).

The greatest strength of the dataset is its wealth of detailed information on the nature and circumstances of injury. This detailed dataset has been the source of data for 28 editions of *Hazard* (including two special Latrobe Valley editions) with a circulation of 2,500, and many other publications. VISS has also responded to more than 2,000 data/information requests from government, media, industry, the tertiary education sector and injury prevention professionals. In addition, it has contributed to various injury prevention research projects where a special strength has been its capacity for case identification for follow-up studies.

The system is limited, on the other hand, by the lack of accurate denominator data, (except for the Latrobe Valley region and child data in one other health region); uncertainty about its representativeness of the whole of Victoria; and its labour-intensive and somewhat costly data collection methods.

These limitations, together with progress towards electronic emergency department management systems, have necessitated the

development of a second generation injury surveillance system in Victoria.

The original VISS database will remain a rich source of injury data during the transition phase to the new database. The injury surveillance functions remain current during the transition stage, with continuation of the Latrobe Regional Hospital paper-based collection.

The new electronic VISS

Introduction

The new data collection will be utilised by VISS for injury prevention. All collecting hospitals will have access to their own injury data, and staff training and general assistance with data quality control from VISS. Conceptually injury surveillance data collection is required at 3 levels. A statewide data collection, using a nationally agreed injury surveillance minimum dataset, constitutes level 1. This data will be particularly useful for epidemiological purposes including the evaluation of the effectiveness of interventions. If the data at this level is of high quality, particularly the narrative account of the injury event, it will be useful for problem identification and research purposes.

It is anticipated that level 2 data, which incorporates level 1 data and expands the number of variables and the depth of information collected, will be collected at a small number of interested hospitals, to form an in-depth sampling frame. The current VISS paper-based collection probably equates most closely with the level 2 collection.

Finally the level 3 data collection, when introduced, will incorporate levels 1 and 2 and collect additional data for specific injury, activity, location or product types by means of patient follow up calls.

Implementation

In September 1993, the Victorian Minister for Health, the Hon Marie Tehan, announced that \$1M would be made available for comprehensive computerised data collection, including injury, in public hospital emergency departments in Victoria. Additional resources were provided by Department of Health & Community Services (H&CS) to assist with the establishment of the new systems. This new data collection has been titled the Victorian Emergency Minimum Database (VEMD). It is intended that the VEMD will have many users, including the originating hospital, the Department of H&CS, VISS and other research groups by arrangement with the Department. The injury component of the VEMD, by agreement with the Department of H&CS will be centralized to VISS, which will have responsibility for data quality control and the dissemination of injury data. Data collected electronically is intended to replace the paper collection of the past.

Data collection in VEMD commenced on 1 October 1995, and there are currently 25 Victorian public hospitals collecting data. They are:

Alfred Hospital
Angliss Hospital
Austin & Repatriation Medical Centre
Ballarat Base Hospital
The Bendigo Hospital
Box Hill Hospital
Dandenong Hospital
Echuca Hospital
The Royal Victorian Eye & Ear Hospital
The Geelong Hospital
Goulburn Valley Base Hospital
Latrobe Regional Hospital
Maroondah Hospital
Mildura Base Hospital



Monash Medical Centre
 Mornington Peninsula Hospital
 Preston & Northcote Community
 Hospital
 Royal Children's Hospital
 The Royal Melbourne Hospital
 St Vincent's Hospital
 Wangaratta Base Hospital
 Warrnambool & District Base
 Hospital
 Western Hospital
 The Williamstown Hospital
 Wimmera Health Care Group

Data items

The number of data items collected in the VEMD is currently 46, which may be grouped by patient biographical data, patient management data, and injury surveillance data. Twenty-seven of these will form the new VISS collection.

The data items comprising the VISS collection are:

Patient Biographical Data

Hospital identifier
 Patient ID number
 Sex
 Date of birth
 Birthplace (country)
 Aboriginality
 Preferred language
 Address suburb/locality
 Address postcode

Patient Management Data

Arrival transport mode
 Transfer source
 Compensable status
 Type of visit
 Arrival date
 Arrival time
 Procedures
 Departure status
 Transfer destination
 Referred to on departure
 Departure transport mode
 Nature of main injury
 Body region injured

Injury Surveillance Data

Description of injury event
 (narrative)
 Injury cause
 Human intent
 Type of place where injury occurred
 Activity when injured

An occupational variable will be included at a later date.

The database

The data received from the collecting hospitals will be checked for completeness, face validity and other measures of quality before merging into the new VISS database which is currently under development. Routine reporting and data analysis functions will be developed as components of this system.

Comments on data received to date

It is early days in the new data collection system. Although collection formally commenced on 1 October 1995, some hospitals have yet to complete the set up of their computer facilities. For the first three months of the collection, October to December 1995, VISS has received at this time, 27,248 cases of emergency department presentation which represent an average of approximately 605 cases per month per hospital. At this rate, VISS would have 181,500 cases of emergency department injury per year.

More complete data are available for the months of January and February 1996, where approximately 680 cases per month per hospital have been received at VISS from those hospitals which have supplied data. This would represent 204,000 cases per year statewide. This capture rate is expected to increase as the collection systems settle down.

A sample of data which are typical of that supplied to VISS from VEMD is contained in Table 1. The narratives describing the injury event in this table are limited in the extent to which they can be useful for injury prevention purposes, due to their insufficient detail.

The advantages of the new system

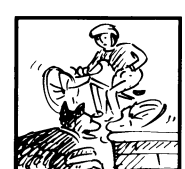
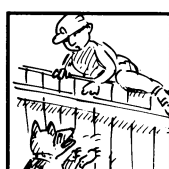
The VISS paper collection amassed about 170,000 cases in eight years. The new electronic system could reasonably be expected to provide in excess of 250,000 cases each year. This is a very rich data source, and for research purposes, largely overcomes the earlier problem of the data not being representative of the population as a whole. Provided the data is collected accurately, it will rank with the best in the world for epidemiological and evaluation purposes.

Further, the data is an all-age collection. There should be no age nor seasonal bias in the new collection.

Unfortunately, the data will not be as detailed as the former paper collection. However future linking with hospital admission data (the Victorian Inpatient Minimum Dataset) would substantially increase its utility as would the development of a level 2 (and 3) sampling frame.

The narrative field - importance for surveillance and research, examples

The Description of Injury Event field, the "narrative field", is extremely important for surveillance and research. The purpose of the field is to clarify the injury event and provide additional information on, eg, product type, brand name, safety precautions. The narrative data is fundamentally important to problem identification



and the development of new counter-measures to prevent injuries.

For example,
“Child opened home bathroom cabinet and ingested 50 ml Brand X from bottle. CRC.”

“Victim fell off forklift pallet when fellow worker raised lift. Safety boots.”

“Ball broke tooth after missed mark in Australian football competition. No mouthguard.”

These examples outline the sequence of events. The following items are included:

Specific location

- own home, bathroom
- workshop
- Australian football ground

Specific activity

- playing
- working on forklift pallet
- playing competition Australian Rules football

Specific product involved (where applicable)

- brand name of medicine
- wooden pallet
- football

Safety device in use at the time

- child-resistant closure on bottle
- workboots
- mouthguard not in use

Seating position in vehicle (where applicable)

(not in these examples)

Ideally the 100-character text narrative will include at least four main ideas about the injury event in one or two sentences, viz eg child was climbing out of high chair, chair

tipped, child fell and hit head on sharp table edge.

- *How* did things go wrong to precipitate the injury sequence (*verb*).eg climbing
- *What* (thing or person) went wrong (*subject*).eg high chair
- *How* were the injuries caused (*verb*).eg hit against
- *What* caused the injuries (*subject*).eg table edge
- Additional information on the circumstances and protective equipment is desirable.

Table 2 shows some well-completed narratives, taken from actual examples supplied to VISS, complete with spelling errors and abbreviations.

Uses for the new VISS database

Currently, VISS intends to continue to report on injury data, particularly by means of publications such as Hazard, reports and journal articles and by responding to information requests. Hospitals will have access to their own and statewide injury data for management, research and training purposes. Aggregated injury data will be available for information and research purposes as part of the VISS information service. Where extensive analyses are required, a fee may need to be charged.

VISS will utilise data for injury prevention research purposes within Monash University Accident Research Centre (MUARC) with appropriate Ethics Committee and hospital approval. Data will be supplied to other bona fide researchers after H&CS, ethics and hospital approval. VISS data will be particularly useful for monitoring the

effectiveness of interventions as well as for surveillance for new hazards.

The future

Because the VEMD provides less detailed information than previously, it is hoped that some hospitals will collect more comprehensive data in the future.

A trial of the more detailed collection (level 2) is expected to commence shortly at Latrobe Regional Hospital (at Traralgon and Moe campuses) under the auspice of MUARC and the NISU, in collaboration with the hospital. Once the results of the trial are known and the methods refined, other hospitals will be invited to take part in the collection. Future linking of the emergency department data system with the inpatient system will greatly enhance the utility of both systems for injury prevention purposes.

*Our friend and colleague Graeme Watt died suddenly on March 31, before completing this article. Graeme joined the Monash University Accident Research Centre in August 1995, after several years of association with MUARC, including a placement as a Public Health Trainee, supervision of his Master of Public Health project and time release from the Department of Health and Community Services. In the time Graeme had been associated with this Centre he had become well respected and a valuable friend to many of us. His contribution to the work of this Centre and to injury prevention generally is greatly appreciated. His sudden death is a great loss to us all.



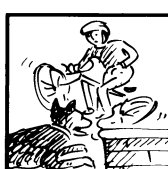
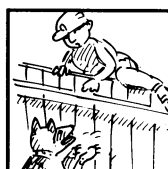
Typical data supplied to VISS from VEMD

(Fictitious data in Establishment Identifier, Address Suburb and Postcode)

Establishment Identifier	Patient ID	Sex	DOB	Birthplace	Aboriginality	Address Suburb	Address Postcode	Arrival Transport Mode	Compensable Status	Type of Visist	Arrival Date	Arrival Time	Procedures	Departure Status	Referred to on Departure	Nature of Main Injury	Body Region	Description of Injury Event	Injury Cause	Human Intent	Place of Injury	Activity when Injured
N23	520048	1	30051974	4100	2	Ringwood	3135	7	6	1	2111995	527	SUT	1	4	2	13	CUT BY KNIFE	29	1	H	L
N23	520030	2	16101977	1102	1	Croydon	3136	4	1	1	2111995	817	JMM/VB/VC/VI/XRAY	2	7	3	14	CAR HIT POLE	2	1	R	U
N23	520034	1	26111953	1102	2	Kew	3101	10	6	1	2111995	1653	ADV	1	7	15	22	FELL ON HEAD	9	1	P	L
N23	398384	1	25011936	1102	2	Albert Park	3206	10	6	1	2111995	1635	XRAY/CUFF/OM	1	3	3	8	FELL ON L SHOULDER	9	1	R	L
N23	520061	1	5081978	1102	2	Bellarat	3350	7	6	1	2111995	2325	WALK	1	4	5	18	FELL OF SKATE	9	1	S	L
N23	520076	1	24051969	9100	2	Footscray	3011	6	6	1	3111995	1850	ADV/DRS	1	7	2	2	ASSAULTED AT PUB HIT IN LEFT EAR	23	7	P	L
N23	467202	2	16071967	1102	2	Brighton	3186	7	6	1	3111995	1048	OM/ADV	1	7	5	5	NOT KNOWN	29	1	U	U
N23	520036	1	11011947	2101	2	Curban	2827	4	1	1	3111995	912	ADV	1	7	5	17	HEAD ON COLLISION	3	1	R	O
N23	520080	1	13101970	1102	2	Fairfield	3078	4	1	1	3111995	2220		1	7	20	22	Injected heroin in one dose instead of 2	18	9	P	L
N23	520078	2	1011977	1102	2	Ormond	3024	4	6	1	3111995	2100	IV/VB/ECG/ADV/VC	3	7	20	22	ARGUMENTY WITH FLATMATE	17	2	H	O
N23	400941	1	8121954	1102	2	Newtown	3220	7	6	1	3111995	118	VE/VI	1	7	2	1	ASSAULTED	29	1	H	L
N23	520067	2	30071958	7104	2	Parkville	3144	7	6	1	3111995	1214	pop/om	1	3	3	19	WALKING GOT PAIN IN FOOT	29	1	H	L
N23	520082	1	8011956	2101	2	Malvern	3052	7	6	1	3111995	2254	EYE/TOP/ADV	1	1	14	F2	FB IN EYE	28	1	P	L
N23	520075	1	10071970	1102	2	Eldon	3173	6	6	1	3111995	1829	SUT	1	4	2	1	assault	6	7	O	O
N23	520068	2	29111953	2107	2	Axedale	3551	7	6	1	3111995	1224	TE/DRS	1	7	2	13	CUT ON BLENDER	20	1	H	C
N23	460372	2	17021934	1100	2	Maffra	3860	4	6	1	3111995	2042	IVC/IVM/RED/XRAY	1	3	4	8	FALL	9	1	H	L
N23	520071	1	9061965	1102	2	Terang	3264	7	3	1	3111995	1537	DRS/OM	1	4	2	13	LIFTING HEAVY OBJECT	20	1	C	W
N23	520037	2	23071976		2	Yea	3717	4	3	1	3111995	1230	IVC/IVM/XRAY	2	7	10	13	PUSHING	20	1	C	W
N23	478688	1	5101950	2205	2	Auburn	5451	4	6	1	3111995	1820	POP/XRAY	1	3	3	9	SLIPPED ON TILE	29	1	H	O
N23	520073	2	20011973	1102	2	Hartwell	3124	6	6	1	3111995	1544	DRS	1	4	1	11	FELL OFF BICYCLE	5	1	R	L

There are 4 additional categories in which data are collected, these are: preferred language, transfer source, transfer destination and departure transport code.

NB: The "Description of Injury Event" narratives above are typical of those currently collected from some hospitals. Table 2 contains narratives with the level of detail necessary for injury prevention purposes.

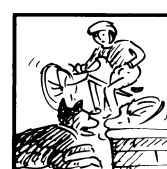
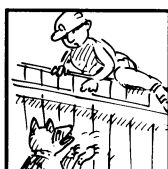


VICTORIAN INJURY SURVEILLANCE SYSTEM

Monash University Accident Research Centre

Sample narratives from “Description of Injury Event”

LIFTING CAR DOOR, FELT “CLICK” IN ELBOW. NOW C/O PAINFUL ELBOW
 POKED IN LT) EYE WITH STICK C/O BLURRED VISION FROM EYE
 PAIN TO L) TESTICLE FOR LAST 20 MINUTES INTO ABDOMEN. JUMPED ON BY GIRLFRIEND. NAUSEATED.
 OD APPROX. 80-100 PANADOL 500MG TABS. ABOUT 1 HR AGO
 IN BED, SWALLOWED SMALL TOY SOLDIER. CHOKING, SPITTING UP MUCOUS.
 ON ROLLERBLADES, FELL ONTO OUTSTRETCHED HAND 2/7 AGO. INJ. RT. WRIST. DECREASED ROM
 MCA 6/24 AGO CAR ROLLED OVER. C/O PAIN RT FOOT, RT KNEE, RT THIGH. NO LOC PAIN. LT SIDE NECK. ? LAST TET TOX.
 WALKING FROM CAR TO HOUSE SLIPPED AND FELL LANDING ON NATURE STRIP
 FELL WHILE ROLLERSKATING. INJURING L) WRIST & LOWER BACK.
 STRUCK TO BACK OF THE HEAD WITH CERAMIC ELECTRIC JUG NO LOC LAC TO BACK OF HEAD 1-2CM 12 STUBBIES OF HOME BREW TODAY
 ? DOMESTIC ASSAULT STRUCK TO BOTH SIDES OF HEAD C/O HEADACHE LEFT SIDE EAR PAIN
 CUTTING WATERMELON LACERATION TO TIP OF L) INDEX FINGER ? LAST TET TOX
 CUTTING POTATOES LAC TO TIP OF L) RING FINGER ? LAST TET TOX
 SCALD TO R) SIDE OF FACE FROM HOT WATER IMMUNIZATIONS UP TO DATE
 FILLING TRUCK WITH OIL, FELL OFF THE SIDE OF TRUCK APPROX 4 FEET. FELL ONTO CONCRETE
 MOVING BUCKET, PICKED UP BUCKET THERE WAS GLASS ON THE FLOOR LACERATION FROM EDGE OF BROKEN GLASS
 PUSHED INTO WOODEN CHAIR THIS AM. PAINFUL LT LWR ARM
 SLIPPED WITH CROW BAR, LT ELBOW HIT STEEL WATER TANK ELBOW PAINFUL
 LACERATION TO R) INDEX FINGER FROM KNIFE LAST TET TOX 1 YEAR AGO
 FELL COMING DOWN STAIRS AT WORK INJ LT ANKLE
 DRINKING BINGE: INGESTED VALIUM: SMOKING HASH OIL AND TOBACCO
 PLAYING BADMINTON FELL ONTO BACKSIDE THEN HIT BACK OF HEAD ON WALL C/O SORE NECK AND LOWER BACK
 FALL FROM BIKE AT 2020 ? LOC. C/O HEADACHE & NECK PAIN. RT) SIDE, C/O VERTIGO
 WOKE WITH SEVERE CRUSHING CHEST PAIN STRUCK HEAD PAIN ON INSPIRATION
 BURNT INDEX AND MIDDLE FINGER R) HAND ON GRILLER 2 HOURS AGO C/O PAIN
 BITTEN BY RED BACK SPIDER APPROXIMATELY 15 MINUTES AGO VOMITING C/O BURNING AT SITE AND AXILLA SLIGHT HEADACHE
 FALL WHILE PUTTING ON STOCKING S THIS AM LANDED ON L) SIDE NO LOC INJURED L) SHOULDER L) HIP L) LEG SHORTENED AND
 ROTATED PREVIOUS INVESTIGATIONS FOR CVA
 SINGLE VEHICLE MCA TODAY AT 1300 HOURS HAD TYRE BLOWOUT AND RAN OFF ROAD HITTING TREES ON PASSENGER SIDE NOW
 C/O PAINFUL NECK, R) SHOULDER , L) WRIST AND L) THIGH
 PHX OF MULTIPLE DISLOCATIONS OF R) SHOULDER CAUSED BY BEING STRUCK BY CONCRETE MIXER PAIN R) SHOULDER
 FLUORESCENT TUBE BURST - MUCK IN LT EYE
 INJURED RT) FOOT. TWISTED FOOT YESTERDAY.
 FALL APPROX. 6FT OFF CONVEYOR BED, HITTING R) LEG & HEAD, LACERATIONS TO NOSE. C/O SORE R) LEG FROM WORKMATES - WAS
 “GROGGY” AFTERWARDS. NO RECALL OF INCIDENT
 FALL TO GROUND TRIPPED ON WALKING EDGE FALLING BACKWARDS C/O PAINFFUL LEFT SHOULDER
 HOT FAT SPRAYED ONTO L) SIDE OF CHEST AND LEFT FOREARM
 FALLEN WHILE PLAYING NETBALL, INJURING R) ANKLE SAME PAINFUL UNABLE TO WEIGHT BEAR
 EPISTAXIS WHILST PLAYING TENNIS TONIGHT PHX RECENT TRAUMA, HIT TO NOSE SUNDAY WHILST PLAYING NETBALL
 FELL OFF BIKE PAIN RT ARM UNABLE TO MOVE FINGERS
 LAC LT 3RD, 4TH 5TH FINGERS CAUGHT IN ROUTER
 WORKING WITH ANGLE GRINDER SLIPPED LAC INNER GROIN
 ALLEGED ASSAULT LAC TO FACE BRUISE LT HIP



Dog Bites

Karen Ashby

A man's best friend, perhaps so, but, for all the pleasure that dogs bring as companions it is worth remembering that bites from dogs are the cause of approximately 260 admissions to public hospitals per year in Victoria alone, with children in the 1-4 year old age group comprising 100 of these. About 4 times as many children are treated in emergency departments but not admitted to hospital. Bites to young children, particularly multiple bites provide graphic media. Under the new *Domestic (Feral and Nuisance) Animals Act 1994* steps have been taken to address the frequency of such incidents. There is now greater onus on owners to ensure the safe behaviour of their dog. In the event of a dog bite, penalties may be applied. These include fines, payment of costs incurred by the victim, declaration of the dog as dangerous with associated costs, or destroying the dog.

The Victorian Injury Surveillance System (VISS) has previously, in 1992 - Hazard edition 12, reported on the problem of dog bite injuries, particularly to children, and made recommendations in an attempt to reduce these incidents. Yet dog bites and other attacks remain a problem. This article will examine cases of dog bite serious enough to require emergency department treatment or hospitalisation in Victoria. It will then discuss issues raised in the recent debate over "dangerous dogs" and the implications of the *Domestic (Feral and Nuisance) Animals Act 1994*, which comes into effect in Victoria in April 1996.

Hospital Admission: Victoria

In Victoria, the annual average rate of dog bites severe enough to require hospital admission for children aged 1-4 years is 42 per 100 000 as compared with, for example, motor vehicle occupant injuries which is 25 per 100 000 and child maltreatment which is 12 per 100 000 (July 1987-June 1993) (Watt, 1995). The actual rates would be about 9% higher, if private hospital admissions were included.

Children in the 1-4 age group were the most likely victims with an average annual frequency over the period July 1988 to June 1994 of 103 bites requiring hospitalisation, compared to an annual average frequency of 267 for victims of all ages. The age and sex distribution for the total of 1602 cases hospitalised in the 6 year period is shown in figure 1.

Private Hospital admissions data is available for the two years July 1992 to June 1994 and shows a total of 54 cases.

Figure 2 shows a slight increase in the rate of dog bites per 100,000 children aged 1-4 years, however this trend is not significant ($p = 0.78$).

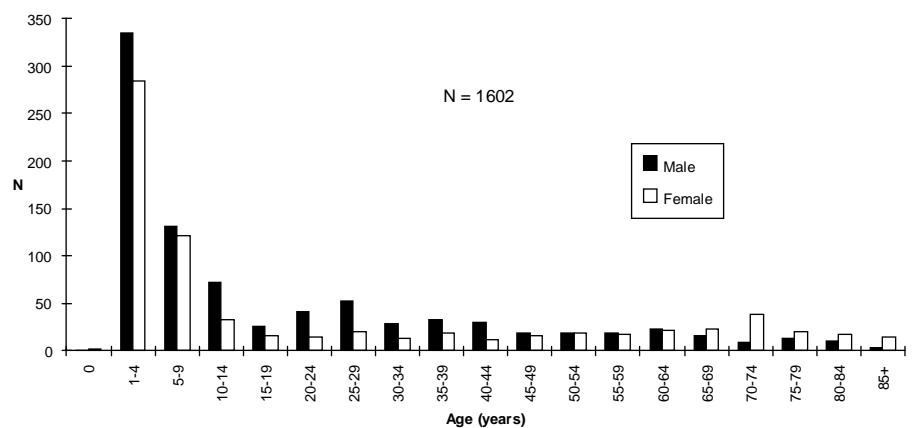
Emergency Department Presentations: VISS

Children (N = 1331 cases)

In this report 1331 dog bite injury cases and 325 other dog related injury cases to children under 15 years are examined from the VISS database¹, representing 2% of all injury cases in children that presented to a VISS hospital over this period.

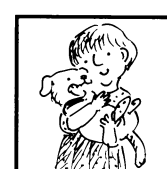
Children under 5 years, particularly toddlers were the frequent group presenting to emergency departments (43% of all dog bite cases). While

**Dog bite injuries by age and sex
Public Hospital Admissions, Victoria, July 1988 to June 1994** **Figure 1**

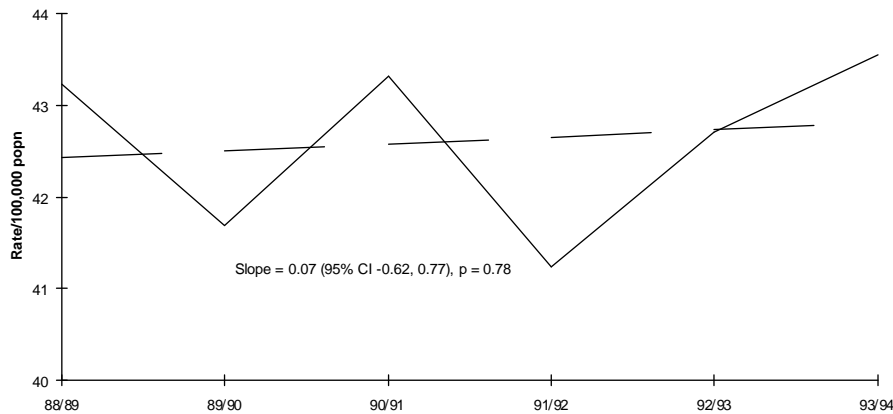


Source: Victorian Inpatient Minimum Dataset, July 1988 to June 1994

¹ In the five year period 1989 to 1993 at 3 metropolitan hospitals, (Royal Children's Hospital, Western Hospital and Preston and Northcote Community Hospital) and the 4 year period July 1991 to June 1995 at two campuses of one rural hospital (Latrobe Regional Hospital - Traralgon and Moe) 1656 children presented as the result of a dog related injury.

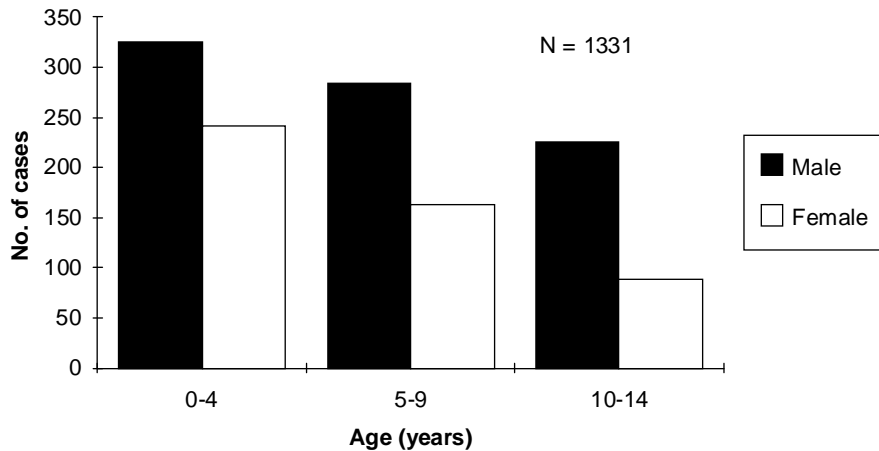


Dog bite injuries, 1-4 years rates and trends **Figure 2**
Public Hospital Admissions, Victoria, July 1988 to June 1994



Source: Victorian Inpatient Minimum Dataset, July 1988 to June 1994

Dog bite injuries to children by age & sex **Figure 3**
- Emergency department presentations at selected hospitals



Source: Victorian Injury Surveillance System, RCH, WH, PANCH 1989 to 1993, LRH July 1991 to June 1995

male victims were more common in each age group than their female counterparts, their proportion became more dominant as the victim's age increased (figure 3). The Australian Bureau of Statistic's Melbourne Home Safety Survey of 1992 found that 35% of households with young children (4 years or less) have dogs. Uncle

Bens, a leading pet food manufacturer, compiled 1995 dog ownership figures showing that 42% of Australian households own an average of 1.5 dogs each.

Thirty-five percent of cases occurred in the summer months December to February.

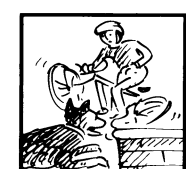
Twenty-three percent of all dog bite injuries were admitted to hospital for further treatment. Younger victims under 5 years of age have an admission rate of 34%. (This is a very high rate of admission compared with an average of 19% admissions for all cases of injury to under 5 year olds in the VISS database). Of the remaining victims, 35% required review or referral, particularly to General Practice (16%) and casualty review (14%). Similarly the Queensland Injury Surveillance and Prevention Program (QISPP) found that of 138 dog bites recorded in a 12 month period, victims aged under 10 years had an admission rate of 24% (QISPP, 1996).

Location

Outdoors at home (own or other) was the most frequent location for dog bite injuries (64% of 1144 cases where location is known). Forty percent of all cases where the location was known occurred in a home other than the victim's. A further 13% of cases occurred indoors in private homes (own and other). Public areas such as roads, footpaths and playgrounds accounted for 19% of known dog bite injury locations. Fourteen percent of the total number of cases did not specify the location of injury (figure 4). Injuries sustained in homes other than the victim's had a higher rate of admission than injuries occurring elsewhere (27% vs 21% for all cases excluding other home). QISPP also found that 72% of injuries recorded in a 12 month period occurred in a residential location.

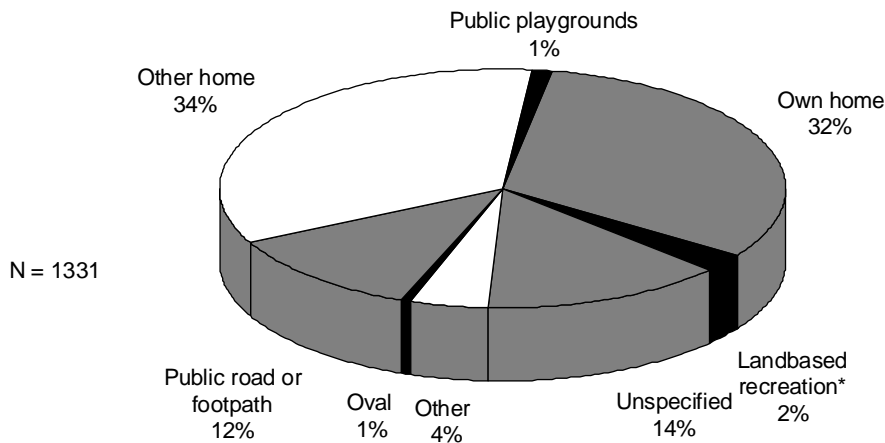
Circumstances of injury

A review of the injury descriptions showed that bites most commonly occurred when the victim was playing with the dog (17% of all cases), patting the dog (10%) or feeding the dog or



**Location of dog bite injuries to children
- Emergency department presentations at selected hospitals**

Figure 4



Source: Victorian Injury Surveillance System, RCH, WH, PANCH 1989 to 1993, LRH July 1991 to June 1995

attempting to play with the dog whilst it was eating (5%) eg. “Trying to grab dog’s food whilst dog was eating, dog bit child”. Pedestrians (5%) and bicyclists (3%) were bitten whilst walking or riding on the street and a further 5% of children were injured when they climbed the fence into a neighbour’s yard to retrieve a ball or simply when they were climbing on the fence, eg. “Playing on a fence, dog on the other side of the fence grabbed arm and pulled child over fence”. Three percent of victims were bitten after teasing or hurting the dog including pulling its tail or hitting it, eg. “pulling dog by tail and the dog bit him” and 11 victims were bitten when hugging or cuddling the dog. Eighteen victims were attempting to stop dogs from fighting; 5 were attempting to pick up a dog; 5 were bitten by a mother dog when the child got too close to puppies; 3 stepped on the dog; and 2 were bitten when attempting to assist a dog which had been hit by a car. Many of the remaining cases provided little detail as the events leading to injury,

“Playing in yard, victim attacked and bitten by dog” or “Walking past the dog, dog bit finger and leg”.

As the above injury descriptions show, many of the cases are related to the way the child interacts with the dog, President of the Royal Society for the Prevention of Cruelty to Animals (R.S.P.C.A.), Dr Hugh Wirth, states that while parents teach children to interact with other people, they rarely give the same guidance with animals and he believes this to be a major contributing factor to dog bite injuries to toddlers in particular. (Life Support, 1993). Mathews and Lattal (1994) state that the vulnerability of younger children to bites can be explained by their limited experience and skills in relation to dogs. “They may be more likely than older children to try to hug dogs, placing their heads and faces in especially close proximity to the dog’s mouth, or they may not yet have learned appropriate approach responses to a dog and therefore may evoke aggressive responses by inadvertently challenging the dog or

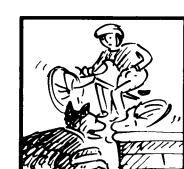
intruding in its territory. Interplay between children and dogs can often be misinterpreted when the level of activity escalates and either shows extremes of dominance or fear causing a dog to bite out of fear or as an attempt to dominate the child.”

Body part injured

The head including the face was the body part most frequently injured, accounting for over half of the dog bite injuries. This is in contrast to dog bite injuries to adults in which injuries to the head or face amounted to 12%, while almost a third of injuries were to the fingers and hands (figure 5). The child’s short stature as well as behavioural characteristics bring the child’s head into close proximity to the dog.

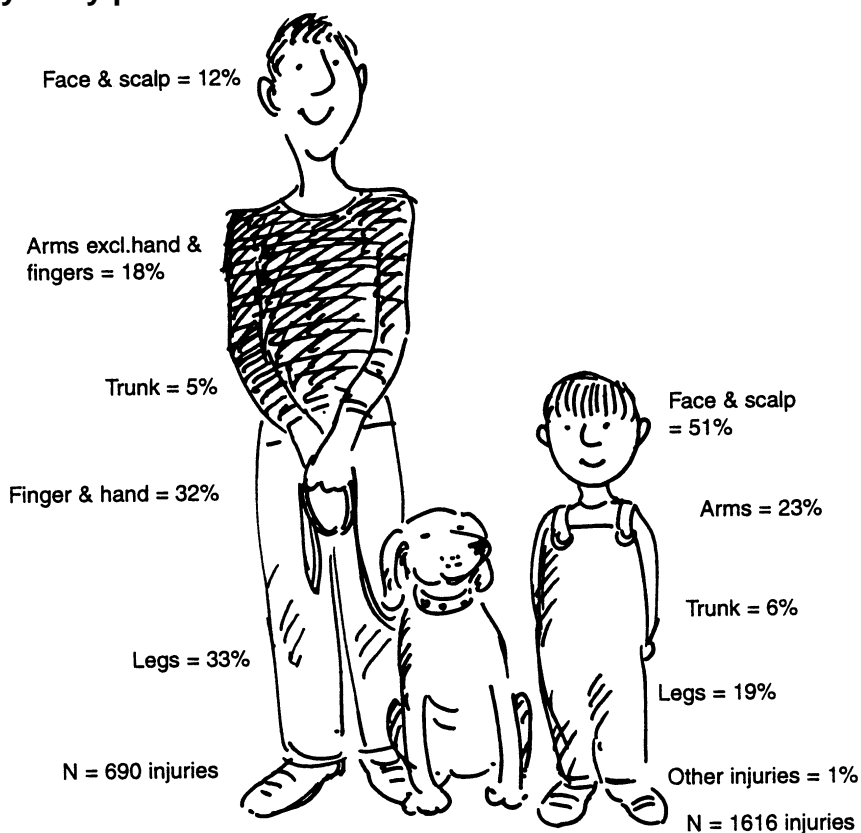
Other dog related injuries

In addition to dog bites, 44 children were admitted and a further 281 were treated for injuries related to contact with dogs, ie. 16% admission rate. Of these cases, injury most often occurred when the victim was knocked over by a dog (24%), fell over a dog (14%), lost control of a bicycle while being chased or attempting to avoid a collision with a dog (9%), was chased by a dog (7%), scratched by a dog (6%) or was pulled over whilst walking a dog (3%). Two thirds of these injuries occurred in residential locations, another 19% in public places (10% on the footpath and 9% on public roads). Lacerations (particularly to the face and scalp - 11% of total injuries sustained), bruising (face and scalp - 7%), fractures (radius/ulna - 5%) and concussion (5%) were the most frequent types of injuries in these cases.



Dog bite injuries to children and adults by body part

Figure 5



(NB up to 3 injuries per case) VISS: RCH, WH, PANCH, RMH, LRH

Adults (N = 585 cases)

The following information is based on 9 hospital years of adult data collected from some 65,000 patients who presented with injuries or poisoning at the Emergency Departments of 4 hospitals.²

There were 887 cases of dog related injuries to adults which represent 1.4% of all adult injuries.

Two thirds (585 cases) of injury related to dog bites. Five percent of adult dog bite victims required admission to hospital (compared to 23% of child victims). Presentations peaked in the 20-24 (17% of total cases) and 15-19 (15%) years age groups.

Location

Half of the total dog bites, where the location of injury was known, occurred in a residential location, with 40% occurring in the garden (most commonly the victim's own yard, 27% of total cases). Unlike bites to children, adult bites in residential locations were more likely in the victims own home than a home other than their own (34% vs 16% of cases where the location was known). A further 24% of cases where the location was known occurred on the footpath, 7% on public roads and 7% in other public areas. The location was unknown or unspecified for a quarter of cases.

Circumstances of injury

Pedestrians either walking by themselves (12%) or walking a dog (3%) were shown in the injury descriptions to be the most common victims of dog bites in public places. Thirteen percent of victims were bitten when attempting to stop dogs from fighting. Others were playing with the dog (5%), patting the dog (4%) or feeding the dog (2%). Seventeen victims were bitten by police or guard dogs, 12 were undertaking deliveries, or such duties, when bitten and another 10 victims were bitten when assisting an injured dog.

Body part injured

Half the dog bites were to the upper limbs, with almost a third of all bites being to the hands and fingers. Other bites were to the lower leg (13% of total injuries), forearm (8%), upper leg (7%) and face and scalp (3%) (Figure 5).

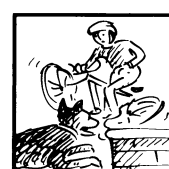
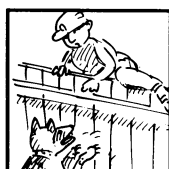
Other dog related injuries

Other dog related injuries (excluding bites to adults) accounted for a further 302 cases. Victims were most commonly injured when they tripped over a dog (19%), over-exerted whilst walking a dog (13%), were knocked over by a dog (11%), were involved in a collision or near collision with a dog whilst riding a bicycle, motorcycle or driving a car (9%) or were scratched by a dog (4%). The admission rates of these victims was 14% (compared with 5% for dog bites).

Public Places

Of the cases where the location of injury is known, 19% of bites to children and 41% of bites to adults occurred in public places. The admission rate for bites to children in public places was lower than bites occurring elsewhere (9% public vs 25% all cases excluding public

² Western Hospital (1.1.91-31.12.92), Preston and Northcote Community Hospital (1.3.92-28.2.93), Latrobe Regional Hospital (1.7.91-30.6.95) and Royal Melbourne Hospital (1.3.92-28.2.94).



places). The general trend towards decreasing frequency with increasing age of children is reversed when considering public places alone. Forty-five percent of children injured in public places were aged 10-14 years. Over one third of adult victims in public places were aged 15-24 years. Similarly, 19% of other dog related injuries to children and 28% of those to adults occurred in public places.

The issue of dog bites in public places is to be addressed with the imminent implementation of the *Domestic (Feral and Nuisance) Animals Act 1994*. The Act will allow individual municipalities to make decisions about the public areas of the municipality where dogs will be permitted, during which periods of the day and under what forms of control. Thus municipalities will have a key role in assisting the prevention of dog bites in their own municipality. Further details of the legislation will be discussed below.

Dog Breeds

The breed of the dog was noted in 12% of child cases and 9% of adult cases recorded by VISS. Of these 210 cases the most common breeds involved in dog bite injuries were German Shepherds or Alsations (involved in 61 cases), Bull Terriers (27), Heelers (21), Rottweilers (20), Dobermans (17) and Kelpies (6). A further 11% of dogs with identifying breed data were cross breeds.

A study undertaken by the South Australian Health Commission (January 1991) indicated that German Shepherds, Bull Terriers, Dobermans, Rottweilers, Blue Heelers and Collies which make up about 21.5% of the dog population, were responsible for 73.6% of attacks on adults and children.

Other studies showed similar trends, Thomas and Buntine, 1987 - 47% German Shepherds; Avner and Baker, 1991 - 21% German Shepherds.

However to declare a breed of dog to be dangerous does not deal adequately with the issue of unacceptable behaviour of individual dogs of any breed. An editorial in *The Medical Journal of Australia* states that even though German Shepherds have been reported to cause more bites than other breeds, veterinarians find that Labradors are often brought to them as aggressors even though they are considered a more docile breed (Med J Aust 1987: 147). One must also bear in mind the size of the dog population that German Shepherds represent. Dog registrations in the City of Waverley (suburban Melbourne) show that German Shepherds were the most frequent breed of dog registered under both categories 'pure breeds' and 'all dog breeds' (Lewis, 1992). The South Australian Health Commission study also found that, while German Shepherds accounted for 34% of all bites from known breeds, they accounted for 8% of the total dog population. This compared with bull terriers, which were responsible for 13% of attacks while making up 2.5% of total dog population. Thus bull terriers represented a greater relative risk than German Shepherds (S.A. Health Commission, 1990).

The editorial also notes that the breeds most commonly involved have often been bred over hundreds of years as guard dogs, fighting or working dogs and not family pets. It should not be expected that a few years of domestication will reverse these traits. Owners of these breeds should assume a greater moral and legal responsibility than those with more "docile" breeds. (Med J Aust 1978: 147)

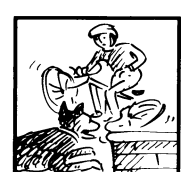
Mathews and Lattal, 1994, found that, while some aggressive reactions of pets result from genetically controlled breed characteristics, many reactions relates to environmental circumstances and learning. Mishandling can make any breed of dog respond aggressively and, on the other hand, many of those breeds commonly involved in dog bites can have a gentle nature with appropriate behaviour-management techniques.

In a newspaper report, President of the R.S.P.C.A. Dr Hugh Wirth called for dog owners to make a careful choice when choosing a breed stating that "some breeds were not suited to suburban life. You put an energetic, hard working dog (blue-heeler cross) into a suburban environment and it becomes very possessive, very intolerant of invaders and is, generally speaking, frustrated" (Webber, 1996). This is backed up by NSW Animal Welfare League CEO Barry Wilton, "too often animal behavioural problems can be traced back to mistreatment resulting from inappropriate matching" (Choice, 1995). When choosing a breed of dog prospective owners should choose a breed suitable to the physical environment in which it is to be kept and with consideration of the family's lifestyle and the age of children in the family.

The new *Domestic (Feral and Nuisance) Animals Act 1994* takes into account the environmental and behavioural factors that may affect individual dogs when considering "dangerous" animals, rather than implicating particular breeds.

Regulation

The *Domestic (Feral and Nuisance) Animals Act 1994* will replace the *Dog Act 1970* on April 9, 1996. The legislation provides a framework for dealing with both dogs that have



injured people and those that may injure. The statewide legislation contained in the new Act is to be enforced by municipal councils who will make decisions about issues such as registration fees, the public areas of the municipality where animals will be allowed and at what times and under what form of control or restraint. The Act states that the occupier of any premises where a dog (or cat) is kept must be responsible in ensuring the animal is not a nuisance, ie. it should not injure or endanger the health of any person nor should it create noise to a degree where it unreasonably interferes with the peace, comfort or convenience of other persons. Under the Act if a dog rushes at, attacks, bites, worries or chases any person or animal, the owner is guilty of an offence and liable upon conviction to a penalty and is responsible for all costs incurred by the victim including ongoing medical treatment.

However the R.S.P.C.A. has raised concerns with the Minister for Agriculture that the maximum penalty currently prescribed under the Act “does not provide the judiciary with sufficient scope to impose a penalty that both punishes the owner of the errant dog as befits the magnitude of the offence, and acts as a deterrent to all dog owners”. It recommends that the maximum penalty be raised to reflect community opinion to a level somewhere in the magnitude of \$20 000 with the option of a custodial sentence (Dr Hugh Wirth, 1996, personal communication).

The issue of dangerous dogs is considered under the Act. Dogs are defined as dangerous if they have caused serious injury (fractures or lacerations requiring multiple sutures), have been trained or are in the process of being trained to attack for

guard purposes (either property or persons). The Regulations also provide for permanent identification of those dogs defined as dangerous by means of enclosures, warning signs and prescribed collars (implanted with a microchip) which are visible from a distance, even at night, for identification and provide a method for ensuring the dogs location. The costs of meeting these requirements and the higher registration costs provide a financial disincentive to own dangerous dogs.

The required seriousness of injuries to be sustained in order for the dog to be declared dangerous does not take into account the importance of repeat, or minor attacks. In Melbourne, as a result of recent incidents of multiple attacks not sufficiently severe to have the dog declared dangerous the manager of the Lost Dogs Home, Dr Graeme Smith has called for a change to the Regulations so that a dog may be declared dangerous after two incidents of charging, attacking, harassing or injuring a person (Ryan, 1996).

Under the provisions of the Act, a dog cannot be declared a “nuisance” nor “dangerous” if the dog has been teased, abused or assaulted, if the victim was trespassing or another animal was on the property upon which the dog was kept, or if a person known to the dog was being attacked in view of the dog.

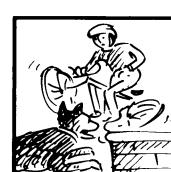
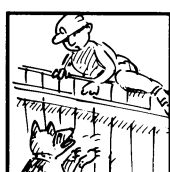
Discussion

Recent dog attacks in Australia to both children and the elderly have led to a spate of media attention on the issue of dog bites. Often debate has centred on the banning of more “dangerous breeds” of dogs, and injury surveillance data clearly shows that certain breeds have been often identified with a greater risk or bite of

attack (German Shepherds, Bull Terriers, Heelers, Rottweilers and Dobermans).

Experts have also attempted to increase owner’s and victim’s awareness of the nature of individual dogs, rather than specific breeds only and the need to exert proper control over all dogs. Director of the Lort Smith Animal Hospital, Dr Alan Lawther stated that: because many people consider the dog a member of the family their expectations of the dog’s behaviour cloud their control of the dog (Mitchell, 1995). David Hill, a veterinarian who writes for the Herald Sun newspaper, identifies the dog’s natural instinct as a factor in understanding some of the reasons dogs bite. He states that “dogs bite to protect themselves, their resources, including food and their territory ... without human control dogs bite”. He further states that owners must ensure that they have sufficient control of the dog. Dogs are a pack animal and respect and obey the leader of the pack. Owners must confirm themselves as the leader of that pack and gain the dog’s respect in order to control the animal (Hill, 1996). However, this may not protect children in the family.

Evidence about dog attacks and dog behaviour suggests that reducing exposure of the most vulnerable members of the community, young children and the elderly, to dogs (particularly breeds where basic instinct makes them dangerous) is one of the strategies most likely to be effective. This has implications for the age that the youngest child should have reached before a family purchases a dog and for physical separation of dogs from young children.



Recommendations

- As young children are especially at risk from dog bite injuries and bites are often severe enough to require hospital admission, it would be desirable for people with young children to avoid owning dogs, particularly those breeds where basic instincts may make them dangerous.
- Separation of young children and dogs is recommended, especially during feeding time. Dogs should not be considered as children's play things, if children will be exposed to dogs they should be educated in safe ways to treat and interact with the dog.
- Education/information should be provided by local government for dog owners and their families, especially those with young children, in living safely with dogs.
- A breed should be chosen suitable to the type of surroundings in which it will reside.
- Owners of dogs need to ensure that when they have visitors, especially those with young children, dogs should be separated from children unless the owner is immediately at hand. Visiting children should be instructed on safe ways to treat the animal.
- Of the cases where a location of injury is known, 19% occurred in public areas and as such local councils should strictly enforce dog control regulations in accordance with the *Domestic (Feral and Nuisance) Animals Act 1994*.
- Dogs are pack animals and need to be dominated. Obedience training from 8 weeks of age will prevent the puppy from establishing a dominance. Desexing helps to reduce the dog's need to dominate.
- The best defence against an attacking dog is to become an uninviting target. Do not move, scream, yell or wave anything about. Become statue-like.

The effectiveness of the new Act in reducing dog attacks and dog bites should be monitored over time. To the extent possible, the rate of dog bite/dog attacks should be compared between municipalities imposing different levels of control over dogs in public places.

References

Australian Bureau of Statistics, November 1992, Safety in the Home, Melbourne, Catalogue No. 4387.2.

Bureau of Animal Welfare, 1996, Regulatory Impact Statement (Draft), Domestic (Feral and Nuisance) Animals Regulations.

CHOICE, October 1995, 'Pet Ownership: your rights and obligations'.

Domestic (Feral and Nuisance) Animal Act 1994, Act No. 81/1994.

Goss, Stephen, September 1992, 'Dog bite injuries', Hazard Edition 12, page 12.

Hill, D., January 1996, 'Taking the killer out of your dog', Herald Sun, Wednesday January 3.

Lewis, A, 1992, Local Laws Officer, City of Waverley, personal communication.

Life Support, August 1993, Official Journal of Ambulance Service Victoria, Vol 3. No. 2.

Penson, Peter, 1996, Director of the Bureau of Animal Welfare, personal communication.

Queensland Injury Surveillance and Prevention Program, February 1996, Dog Bites, Bulletin 35.

Ryan, K., March 1996, 'Dog attack reveals loophole', Sunday Herald Sun, Sunday March 10.

South Australian Health Commission Injury Surveillance Monthly Bulletin No.29 January 1991.

The Medical Journal of Australia, December 1987, 'When best friends bite', Vol 147.

Thomas, P.R., and Buntine, J. A., 1987, 'Mans best friend?: a review of the Austin Hospital's experience with dog bites, The Medical Journal of Australia, Vol 147: 536-540.

Uncle Ben's National Pet Ownership Survey, 1995, Reark Pty Ltd.

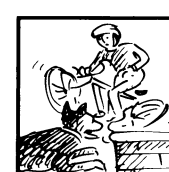
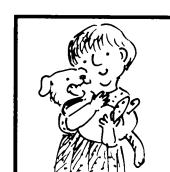
Watt, G. 1995, 'Hospitalised Injuries Victoria, July 1987 - June 1993', Monash University Accident Research Centre Report No. 67.

Webber, N., 1996, 'Dog attacks blamed on owners', Herald Sun, Wednesday January 3.

Wirth, Hugh, 1996, President, Royal Society for the Prevention of Cruelty to Animals, personnel communication.

Acknowledgments

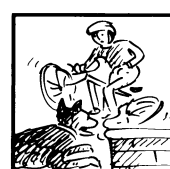
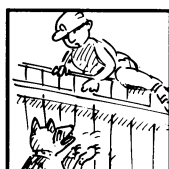
VISS would like to thank Dr Hugh Wirth, President of the R.S.P.C.A. and Peter Penson, Director Bureau of Animal Welfare for their valuable comment; also Geraldine Richards, Bureau of Animal Welfare for providing information on the *Domestic (Feral and Nuisance) Animal Act 1994* and the Child Safety Centre, Royal Children's Hospital for providing background literature. Special thanks to Guilietta Valuri of MUARC for assistance with Hospital Admissions data. Her patience is much appreciated.



- INDEX -

Subject	Edition	Pages
Babywalkers, update	16,20,25	1-4,12-13,7-8
Bunkbeds	11	12
Bicycles		
- Bicycle related injuries	6	1-8
- Cyclist head injury study	2	2
- Cyclist head injury study updates	7,8,10	8,13,9
Burns		
- Scalds	3,25	1-4,4-6
- Burns prevention	12	1-11
Car exhaust gassings	11,20,25	5-6,2-4,3-4
Chainsaws	22	13-17
Child care settings	16	5-11
Data base use, interpretation & example of form	2	2-5
Deaths from injury (Victoria)	11	1-11
Dishwasher machine detergents - Update	18	11
Dogs		
- Dog related injuries	3	5-6
- Dog bite injuries	12,25	12,13
Domestic architectural glass	7,22,25	9-10,1-5,12
Domestic Violence	21	1-9
Drowning/near drowning		
- Immersions	2	3
- Pool fencing legislation, update	2,7	3,7
- Drowning & near-drowning at home	5	1-4
Escalator injuries	24	9-13
Exercise bicycles, update	5,9	6,13-14
Finger jam injuries	10,14,16,25	5,5-6,9-10,9-10
Home injuries	14	1-16
Horse related injuries	7,23	1-6,1-13
Infants - injuries in the first year of life	8	7-12
Intentional injuries	13	6-11
Latrobe Valley		
- The first three months	9	9-13
- Latrobe Valley injuries	* March 1992	1-8
- Injury surveillance & prevention in the L. V.	*Feb 1994	1-14
Lawn mowers	22	5-9
Martial arts	11	12
Motor vehicle related injuries, non-traffic	20	1-9
Needlestick injuries	11,17,25	12,8,10-11
Older people, injuries among	19	1-13
Off-street parking areas	20	10-11
Playground equipment	3,10,14,16,25	7-9,4,8,8-9,13
Poisons		
- Child resistant closures	2	3
- Drug safety and poisons control	4	1-9
- Dishwasher detergent, update	10,6	9-10,9
Roller Blades	15,25	11-13,12
School injuries	10	1-8
Shopping trolleys	22,25	10-12,8-9
Skateboard injuries	2	1-2
Smoking Related injuries	21,25	10-12,6-7
Sports		
- Sports related injuries	8	1-6
- The 5 most common sports	9	1-8
- Adult sports injury	15	1-10
Tractor injuries	24	1-8
Trampolines	13	1-5
VISS: early overview	1	1-5
VISS: how it works	1	6-8
Work Related Injuries	17,18	1-13,1-10

* Special edition



Editorial Board

Professor Peter Vulcan, Monash University Accident Research Centre
Dr Joan Ozanne-Smith, Monash University Accident Research Centre
Assoc. Professor Terry Nolan, Department of Paediatrics, Melbourne University
Mr. Jerry Moller, National Injury Surveillance Unit

VISS Staff

Director: Dr Joan Ozanne-Smith
Co-ordinator: Virginia Routley
Research Assistant: Karen Ashby
Administrative Assistant: Christine Chesterman
Data Processor: Julia Palmer Latrobe Regional Hospital
Associate Director: Assoc. Prof. Terry Nolan
(Child Injuries)

General Acknowledgements

Participating Hospitals

Latrobe Regional Hospital (Traralgon and Moe)

The contributions to the collection of VISS data by the director and staff of the Emergency Departments of these hospitals, other participating clinicians, Medical Records Departments, and ward staff are all gratefully acknowledged. The surveillance system could not exist without their help and co-operation.

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.

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:

Building 70
Accident Research Centre
Monash University
Wellington Road
Clayton, Victoria, 3168

Postal address:

As above

Phone:

Reception (03) 9905 1808
Co-ordinators (03) 9905 1805
Director (03) 9905 1810
Fax (03) 9905 1809

Reminder

Enclosed in this edition is a client survey. In 1995 VISS received a small grant from the Victorian Health Promotion Foundation to support the implementation of findings from VISS data analyses and research. This grant included funds for a survey of VISS clients and potential clients on their data and other needs for progressing the recommendations for action published in *Hazard*.

If you have previously completed this survey thank you and please disregard the above.



Project Funded by Victorian Health Promotion Foundation

VISS is a project of the Monash University Accident Research Centre.



*Hazard was produced by the Victorian Injury Surveillance System
with the layout assistance of Glenda Cairns, Monash University Accident Research Centre.
Illustrations by Jocelyn Bell, Education Resource Centre, Royal Children's Hospital.*

ISSN-1320-0593

Printed by Sands and McDougall Printing Pty. Ltd., North Melbourne

