

# Accidents on hospital wards

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## Abstract

Eight hospitals reported 781 non-iatrogenic accidents occurring to patients and visitors under 16 years of age during an 18 month period up to October 1989. Accidents more often involved boys and children aged 3 to 5 years old. Falls from a height, slips, and striking accidents were common by day and falls by night. A total of 41% of accidents to inpatients occurred when parents were present. Only three accidents were serious. Altogether 27% involved beds and cots, and only one consequent injury was more than minor. Data collected routinely in case of medicolegal action can be presented in a form that may facilitate preventative work. Potentially remediable causes for concern include falls from beds and cots and the use of makeshift equipment.

Accidents are a frequent cause of mortality and morbidity to children, accounting for about 700 deaths and over one million attendances at accident and emergency departments every year.<sup>1</sup> Hospitals are generally considered to be places of safety where injuries are treated rather than generated. The problem of accidents occurring to children already on the ward has received little attention.<sup>2-4</sup> The atmosphere on children's wards is becoming more relaxed and parents are encouraged to participate in all aspects of the care of their child. It is to be expected that just as in the home, accidents may occur in the hospital setting in view of the additional dangers of mixed age groups at play together and heavy equipment. Although accident information is collected routinely in case of medicolegal action, with expenditure of both time and money, little use is made of these data for enhancing prevention. This paper proposes another approach whereby this might be achieved. The purpose of the study was to collect standardised information about accidents to children from a range of paediatric units, to identify major factors associated with accidents from this information, and to propose measures to reduce the frequency and severity of accidents. The study was exploratory and not designed to test hypotheses.

## Methods

A convenience sample of eight hospitals, varying from specialised paediatric hospitals accepting tertiary referrals to district hospitals with paediatric wards, was recruited. A questionnaire was circulated over an initial pilot period running from 1 June to 31 August 1988

and then over a full year from 1 November 1988 to 31 October 1989. The information collected concerned the accident, the injured person, the injury sustained, and the supervision of the child.

An accident was defined as 'an unpredicted event which potentially could lead to injury'. The subjects were inpatients or outpatients age 16 or under anywhere in the hospital including visitors. Iatrogenic events were specifically excluded.

Only descriptive analyses were performed. No formal hypotheses was tested in the analysis.

## Results

A total of 781 questionnaires were analysed. Accidents to boys were commoner at all ages, and most accidents occurred to children under 5 years old (table 1).

Falls from a height were the commonest type of accident accounting for 42% of all cases. This was particularly noticeable for accidents during sleeping hours (table 2). The next category included being struck by, or coming into contact with, another person or equipment. There were also 11 scalds caused by hot drinks. Ten children were bitten by another child and one by a pet hamster. One entrapment was potentially fatal: a child of under 10 months was reported as having a bruised eye after being found trapped between the cot bars and the mattress.

Table 1 Age and sex distribution (number of cases)

Age	Boys	Girls	Not known	Total
1-<10 months	27	14	9	50
10-<19 months	62	42	13	117
19 months-<3 years	74	53	12	139
3-<5 years	117	67	2	186
5-<10 years	103	72	5	180
10-<16 years	60	36	6	102
Not known	—	—	—	7

Table 2 Accident types at different times (% of cases)

Time	Fall	Struck	Slip
08:00-11:59	38.5	26.9	27.4
12:00-15:59	34.7	30.0	25.3
16:00-19:59	32.4	30.7	25.7
20:00-23:59	52.3	20.0	18.5
00:00-03:59	90.3	6.5	3.2
04:00-07:59	62.0	21.1	11.3

Fall=fall from a height; slip=fall on one level.

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Table 3 Type and severity of injury (number of cases)

Type	Minor	Moderate	Severe	Total
Bruise	227	12	3	242
Laceration	147	8	0	155
Burn	11	0	0	11
Bite	11	0	0	11
Fracture	0	2	2	4
Sprain	6	2	0	8
Overdose	0	0	1	1
Broken tooth	0	1	0	1
Epistaxis	3	0	0	3
Eye	2	0	0	2

The commonest result of an incident was no injury (338 cases). Bruises and lacerations were the commonest injuries (table 3).

The following accidents were serious. There were three cases involving contact with equipment resulting in bruising of children with either low platelet counts or haemophilia. There were two cases involving limb fractures, one after a three metre fall from a climbing frame, and the other in a child who was non-weight bearing as a result of a recent leg fracture. Finally one psychologically disturbed child took an overdose of antidepressant tablets (dothiepin 25 mg, 12 tablets). All these children required medical intervention.

Two fractures were reported as moderate: two cases of fractured skull, one when a child fell out of bed and the other when a visiting child fell off a chair. These two children required observation but not treatment.

The commonest site injured was the head (397 cases) (table 4). Thirty five individual locations were listed. Accidents varied in type according to their location (table 5).

Altogether 732 accidents occurred to patients, 302 (41%) while the child was in the presence of its parents. The remainder took place while nursing staff were supervising the child. Only two of these accidents involved outpatients, one in a day ward and the other in the x ray department. Forty nine accidents occurred to visiting children, 40 (82%) of whom were in the care of their parents and nine (18%) were unsupervised.

Twenty seven per cent of accidents involved beds and cots. Most of the associated accidents (78%) were falls and 52% occurred when parents were present. The skull fracture described above was the only more than minor injury to a well child after a fall from bed. The next most common equipment group was toys, which were responsible for 13% of equipment associated accidents.

Table 5 Types of accident by location (% of total accidents in that location)

Location	Fall	Struck	Slip	Poisoning	Bite	Total No
Main ward	52.8	19.9	19.1	<1	<1	373
Cubicle	41.6	36.0	16.9	0	0	89
Side ward	54.9	23.9	11.3	0	0	71
Playroom	25.0	32.8	26.6	<1	6.3	64
External play area	35.6	26.7	31.1	<1	0	45
Ward corridor	11.6	39.5	48.8	0	0	43
Bathroom	10.5	26.3	52.6	10.5	0	19
Toilet	7.7	38.5	46.2	0	0	13

## Discussion

This study had analysed information about a large number of accidents occurring in a hospital setting. Though many were trivial, they could readily have been more serious. Parents expect their child in hospital to be especially safe. Data about accidents are routinely collected but rarely used except in the case of medicolegal action. In this study, the data have been presented in a form that demonstrates the circumstances in which accidents are likely and could thereby form the basis of preventative work.

Frequency of accidents chiefly reflects exposure and it could be argued that injuries caused by the normal play and activity of children are difficult to avoid. Nevertheless, certain potentially remediable causes for concern can be identified.

A large proportion of night incidents were falls from a height and many equipment injuries involved cots and beds. Several of these falls were the result of the improper use of cot sides, that is, they were only half way up or incorrectly secured. This often happened in the presence of the mother. The correct use and the mechanism of hospital cot sides needs to be properly explained to parents and to junior nursing and medical staff. There are many different cot designs and staff must know how to operate the particular brands with which they are working. Another factor is the increased height of hospital beds compared with beds used at home. A possible solution would be the replacement of conventional beds with beds of adjustable height with an appropriate child resistant mechanism. These should be kept in the low position and raised only when required. Another consideration is the use of the correct bed for the child. Toddlers should clearly be in cots with sides. However, older children may just climb out, falling an extra metre in the process, and may be safer placed in a bed.

Other accidents might have been avoided by a better knowledge of child safety, for example, scalds from hot drinks and the entrapment between cot sides and the mattress. The latter also demonstrates the importance of using the correct equipment for the job and not makeshift arrangements, as has been previously shown for pacifiers.<sup>5</sup>

Nursing staff do receive basic information on safety during training, and it is a statutory requirement for them to be made aware of their responsibilities under the Health and Safety at Work Act (1974). During induction to the ward, however, these should be reviewed in a paediatric context. Training for medical, auxiliary, and clerical staff could also be provided. This may best be carried out if it is the responsibility of a named individual, preferably a senior member of the ward staff.

Most accidents recorded in this study were trivial and this agrees with the results of others.<sup>2,3</sup> But this also suggests that if children present to accident and emergency departments with severe injuries and a history of a fall from a cot or bed, non-accidental injury should be suspected,<sup>6,7</sup> as the experience from this study is that such falls rarely have serious consequences.

Table 4 Site of injury

Site	No of cases
Head	397
None	80
Leg	52
Mouth	42
Arm	40
Back	38
Hand	38
Eye	29
Foot	21
Face	20
Abdomen	12
Chest	8
Internal	7
Shoulder	3
Labia	1

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### Medieval accidents

A medical historian at the College of Physicians of Philadelphia has looked at the chronicles of several English saints and martyrs to find out about childhood accidents in the middle ages (Eleanora C Gordon, *Medical History* 1991;35:145-63). There are, apparently, historians who have claimed that people in medieval times had no concept of childhood and lacked awareness of 'the particular nature of childhood'. Some assertions are inherently unlikely and when the roll call of daft ideas of the twentieth century comes to be read that one will surely rank as one of the daftest. It gains no support from the records of the hagiographers.

In the face of an emergency a common reaction was to call upon the help of a saint, promising a pilgrimage or a gift in return. Those who were in charge of the shrines of the saints would make careful records of the apparently miraculous tales told by the pilgrims and many of these records are still available, giving information about the kinds of mishap which befell people in those days. Dr Gordon has looked at the chronicles related to four saints and two revered 'near saints': St Thomas Beckett, St Wulfstan, St Thomas Cantilupe, St Edmund, Simon de Montfort, and King Henry VI. Covering the years 1170 to 1500 they give details of 135 accidents involving 134 children. Not surprisingly boys outnumbered girls by almost two to one and nearly a third of the children were under 3 years old. By far the most common type of accident was near drowning, accounting for 56% of the total. Head injuries occurred in about one in eight of the victims and choking, suffocation, or strangulation in a similar proportion.

The accounts give plentiful evidence of intense concern for the welfare of the children on the part of parents and neighbours but, of course, the series is highly selected, firstly because the children all recovered and secondly because only the more devoted parents would bother to make the pilgrimage after the child's recovery. There is, too, evidence that the foibles and behavioural characteristics of children of various ages were recognised and understood.

The misuse and ill treatment of children has, no doubt, always existed and attitudes to them have clearly varied from age to age but can there really ever have been an age when parents did not recognise 'the particular nature of childhood', the horrors of child labour and child abuse notwithstanding? Children are there to be observed; they must always have been observed. It can only be in the interpretation of their observations and in their reactions to them that adults in different ages have differed.

Returning to the late twentieth century, water is still a major hazard<sup>1 2</sup> and, of course, we have to cope with the car,<sup>3 4</sup> but in Britain at least we do not often have the carnage wrought by the gun.<sup>5 6</sup>

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