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As the sub-speciality of paediatric emergency medicine grows, so does the literature to support it. There is now plenty of help out there for health professionals to learn about medical emergencies or major trauma in children. But information about the little things in life can be the hardest to find – the things that cause the majority of parents to take their child to an emergency department at some time.

This book is meant as an easy reference book for busy doctors and nurses, in hospitals, minor injury units or family practice. It contains information in an easy to find, easy to read format. It covers everything from foreign bodies up the nose to orthopaedics. The authors have drawn upon their own experience and included helpful hints gleaned over years of practice, which are rarely written down formally in books.

STOP Stop signs within the text indicate where the subject is beyond the scope of the book and may be beyond the reader’s experience.

⚠️ Warning signs indicate potential pitfalls.

F Davies
January 2003
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Acknowledgements

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Introduction

Children comprise between 20–35% of all patients attending a general emergency department (ED). In the UK it is also estimated that in any one year around 2.3 million children visit the ED as a result of injury: this translates to around a fifth of all children. The impact, therefore, of children on emergency services and, likewise, the impact of emergency services on children, is enormous. Children are likely to have repeated attendances at an ED, and the care that they receive influences both the initial presentation and future attendances.

The purpose of this book is to enable doctors, nurses and emergency nurse practitioners to manage common minor injuries, to know when to ask for help, and to spot when the minor injury is only the tip of the iceberg, so to speak. It is relevant for practitioners based in hospitals, minor injury units and primary care centres. Similarly, although aimed at a UK audience, much of it will be relevant to other countries. It is not an exhaustive text and, in this evidence-based world in which we now live, much is written on the basis of experience. Minor injuries are one of the poorest-researched areas of medicine and the quality of the scientific literature is generally poor.

A child’s minor injury should not be seen in isolation. The whole spectrum of the child’s development, family and life experience is important, and the episode should be managed in a manner that is efficient, pleasurable and educative. Although the professional might define an injury as ‘minor’, the effects on the child and family may be considerable, not least a visit to an ED itself! Children should be seen in an area audiovisually separated from adults. This area should be specifically designed for their needs with child-sized equipment, suitable play areas, and examination and treatment rooms that are bright and welcoming and reflect children’s own familiar environment. It is quite easy to transform an area with brightly coloured paint and posters, and funding is often readily available from local charities.

A well-designed department can also help with the assessment and treatment of children: in particular, the use of a play area, visible from the main working area. The importance of play in the assessment and treatment of
children should be taught to all staff. Toys can be used as distraction therapy during painful procedures, as tools for examination, and as entertainment during observation or waiting times. Maintaining a stock of playthings is often difficult, as they inevitably seem to disappear from a department, and a constant supply is necessary. Staff should be encouraged to bring in their own children’s outgrown toys, and local businesses may be happy to provide donations. Larger departments may employ a play therapist. This person can identify suitable play tools, ameliorate the atmosphere of the waiting area, and usefully prepare children for procedures and the hospital environment.

Children are usually accompanied by parents, siblings and/or a variety of assorted company. A family waiting room needs to be far larger than may be thought necessary for the numbers of patients seen! Facilities to assuage boredom, such as a television and/or video and vending machines, are also useful. The area may need to be used for the children of ill or injured parents.

All ED doctors and nurses have experience of dealing with children’s problems. It is recommended that departments that see more than 18000 children per year have both a lead consultant and 24-hour nursing cover, all of whom have additional training in paediatrics. There needs to be close liaison between emergency medicine staff and paediatricians, and it is recommended that a consultant paediatrician acts as a designated link for advice, teaching and development of guidelines. Clinicians with a paediatric background will need to develop the emergency aspect of their specialty. Emergency specialists can offer expertise in trauma and adolescent issues.

The word ‘children’ does not define a homogenous group. The facilities and skills needed to deal with babies are very different to those required for adolescents. A wide range of sizes and type of equipment are needed. It is important that staff are aware of the particular size of kit needed, and charts of ET tube sizes and drug dosages are essential.

Emergency departments need to have a strong awareness and proper protocols for dealing with non-accidental injury, as it is often here that suspicions are first raised about a child’s well-being. They may also have other functions as well as the reception, assessment and treatment of acutely ill or injured children. Many run review clinics for the child’s injury to be reassessed or redressed. These clinic areas must also be child friendly and it is often here where the benefits of a comfortable first visit are recognized. EDs can provide a vital role in the prevention of children being admitted to hospital with the use of observation beds (e.g. for accidental overdose, minor head injury, etc.) or outreach nurses, who follow up children with a home visit.
INTRODUCTION

‘Accidents’ are the commonest cause of death in children aged 1–15 years in the UK. Injury is also a leading cause of ill health and disability in this age group, causing around 10,000 children to become permanently disabled every year. Many injuries in children presenting to the emergency department (ED) could have been avoided by adequate supervision and common sense measures, so in a sense are not truly ‘accidents’. There is a marked association between age and location of the injury. Healthy living for children must include physical activities and the gradual development of independence; therefore, injuries are inevitable during this period. To minimize the incidence and the severity of injuries, children and young people must be in environments that are safe, while giving fun and freedom.

Most injuries to children less than 3 years of age occur in the home or garden. At this age, children develop rapidly and carers often underestimate their capabilities. Although it is impossible to have ‘eyes in the back of your head’ when looking after small children, it is important that true neglect is not missed (see Chapter 15 ‘Non-accidental Injury’). When children become older, they attend nurseries or schools, and move further from home for play and other activities. Many incidents leading to injury then occur in schools, sports facilities, in official playgrounds or in derelict buildings, on roads, farms and at work.

There is also a strong association between injury rates and social class. For example, children in social class 5 are seven times more likely to die in a pedestrian road accident than those in social class 1.

All parents, carers, children and young people, and health care professionals
should use every opportunity to be active in injury prevention programmes in the classical areas of: education, engineering and enforcement (legislation).

**EDUCATION**

**The role of teachers**

Injury awareness and first aid skills can be incorporated into most parts of the school curriculum and information to support these sessions can come from local EDs, the emergency services and rail service personnel. This can be complemented by visits to EDs. A successful example of this approach is the Injury Minimization Project for Schools (IMPS), which is aimed at year 6 children.

**Parents, carers and children themselves**

Most research on injury prevention indicates that it is difficult to bring about behavioural changes; however, motivation is high in the context of acute injury. Health care professionals should take advantage of this to try to prevent recurrence of the incident that led to the injury. Parents are more receptive to advice about cycle helmets when their child has just fallen off a bike, or to the suggestion that drugs should be locked away in a drug cupboard after an accidental overdose. Leaflets on these subjects can be made available in the ED, and educational videos can be played in the waiting areas.

Key subjects are:
- safety equipment, e.g. stair gates and fireguards;
- child-resistant containers for medicines;
- safe storage of household cleaners and garden products;
- safe positioning of hot objects, e.g. cups of tea, kettles, pans and irons;
- safe use of equipment, e.g. not to put baby bouncers on work surfaces, and always supervise the use of babywalkers;
- safety on roads and railways.

**The role of health visitors**

Health visitors have a key role in injury prevention. At routine assessments and in clinic visits, they can give out information leaflets and discuss the development of the child in relation to injury prevention. On home visits, they can give constructive advice on hazards in the home. National guidance recommends that health visitors should receive notification of all ED attendances in small children.
ENGINEERING

Knowledge of child development and the potential for injury should be included in the training of all designers, architects and engineers. The design of every home, public building, playground and highway, and manufacturers of all consumer products should take into account the fact that children may be injured by their products. If a doctor or nurse becomes aware of a hazard that has led to the injury of a child, this should be discussed with a senior doctor. With parental permission, this can then be reported to the appropriate agency, e.g. the local authority, Trading Standards Office, Health and Safety Executive or Member of Parliament, for action.

ENFORCEMENT (LEGISLATION)

To be effective, legislation must be realistic and enforceable. Examples that have been beneficial in reducing injury are the legislation on child-resistant containers, and on the wearing of seatbelts and the restraint of children in cars.

Audit and research in emergency departments can support or denounce the need for new legislation or a change in legislation. Health care professionals are in a good position to suggest subjects for audit and research based on the patterns of injury they see in their clinical work. The seat belt laws and European Standards on consumer products are good examples of changes that have been supported by accurate information from EDs.
Pain management

INTRODUCTION

The vast majority of minor injuries cause some degree of pain. Recognition and alleviation of pain should be a priority when treating injuries. This process should ideally start at the triage point and finish with ensuring that adequate analgesia is provided at discharge.

On the whole, pain is commonly under-recognized and undertreated in children. There are several reasons for this. In particular, assessing pain in children can be difficult. Children in pain may be quiet and withdrawn, rather than crying. Also there is often insecurity about dosage of medication in children. There is a myth that children feel less pain than adults but this is not true: even neonates and fetuses feel pain.

Communication may be difficult with an upset child, and it may be difficult to distinguish pain from other causes of distress (e.g. fear, stranger anxiety, etc.). Some words are better understood than others, depending on what words the family use, e.g. hurt, sore, poorly. In some cases, children may deny pain for fear of the ensuing treatment (particularly needles).

ASSESSMENT OF PAIN

STOP Think ... if pain is severe, is it major injury or ischaemia?
Your prior experience of injuries can help in estimating the amount of pain the child is likely to be in. For example, a fractured shaft of femur or a burn are more painful than a bump on the head. Beyond that, in young (non-verbal) children, we can only rely on visual clues, such as crying or loss of movement of a limb, which can be measured by behavioural scoring systems, such as the CHEOPS score.

Pain assessment now forms an integral part of the National Triage Guidelines. The pain ladder used in the guidelines uses descriptive and numerical scales. The Advanced Paediatric Life Support (APLS) course pain ladder (Advanced Life Support Group Ltd) incorporates panda faces, and some scales are based solely on faces, such as the Wong Baker faces.

However, children may have difficulty in applying abstract concepts, such as numbers or pictures, to their pain, or may have reasons for either downplaying or exaggerating their pain, so we suggest a composite score rather than relying on one system. Figure 3.1 shows a suggested pain assessment tool, which is currently being validated for use in the ED. The assessor uses the available information to decide on the category of the pain.

**WHAT ARE WE TREATING?**

- *Pain*  This requires analgesia (see below).
- *Fear*  All efforts should be made to provide a calm, friendly environment. You should explain what you are doing, preparing the child for any procedures, and let the parents stay with the child unless they prefer not to or are particularly distressed.
- *Loss of control*  Children like to be involved in decisions and feel that they are being listened to.
- *Focus on injury*  Distraction and other cognitive techniques are extremely useful (see below).

**HOW TO TREAT PAIN**

Having assessed the degree of pain, there is a range of ways to treat it. This includes psychological strategies, non-pharmacological adjuncts and pharmacological agents, via various routes. A working knowledge of all the options is useful, so that your treatment is appropriate for the child’s age, injury and degree of pain. A suggested strategy for common conditions is given in Table 3.1.
<table>
<thead>
<tr>
<th>Faces scale score (circle)</th>
<th>No pain</th>
<th>Mild pain</th>
<th>Moderate pain</th>
<th>Severe pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number score (circle)</td>
<td>0</td>
<td>1–4</td>
<td>5–7</td>
<td>8–10</td>
</tr>
<tr>
<td>Behaviour (circle each relevant observation)</td>
<td>Normal activity</td>
<td>Rubbing affected area</td>
<td>Protective of affected area</td>
<td>No movement or defensive of affected part</td>
</tr>
<tr>
<td></td>
<td>No ↓ movement</td>
<td>Decreased movement</td>
<td>↓ movement/quiet</td>
<td>Looking frightened</td>
</tr>
<tr>
<td></td>
<td>Happy</td>
<td>Neutral expression</td>
<td>Complaining of pain</td>
<td>Very quiet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Able to play/talk normally</td>
<td>Consolable crying</td>
<td>Restless, unsettled</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grimaces when affected part moved/touched</td>
<td>Complaining of lots of pain</td>
</tr>
<tr>
<td>Injury example</td>
<td>Bump on head</td>
<td>Abrasion</td>
<td>Small burn/scald</td>
<td>Large burn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Small laceration</td>
<td>Fingertip injury</td>
<td># long bone/dislocation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sprain ankle/knee</td>
<td># forearm/elbow/ankle</td>
<td>Appendicitis</td>
</tr>
<tr>
<td></td>
<td></td>
<td># fingers/clavical</td>
<td></td>
<td>Sickle crisis</td>
</tr>
<tr>
<td>Category chosen (tick)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3.1 Pain assessment tool.
### Psychological strategies

Psychological strategies should be relevant to the age of child, but are useful in all situations. Experienced staff are invaluable when handling distressed children. It is important to be reassuring but sympathetic. Cuddling, stroking and talking to children helps to reassure them. Simply explaining what you are going to do will help the child gain confidence in you.

Distraction can be provided by toys, blowing bubbles, murals on walls, reading or story-telling using superhero or magical imagery to make the pain go away. Hypnosis is successful but is a skill that has to be learned. Music is both soothing and distracting. Videos are useful, although turning one off before it has finished can be tricky!

### Non-pharmacological adjuncts

Splintage of injured limbs, and elevation of the lower leg above hip level or elevation of the hand in a high arm sling (see Chapter 17 ‘Practical Procedures’ reduce swelling and, therefore, pain. When treating burns,
reducing air currents with cling wrap or dressings is sometimes all that is needed. Regular application of ice packs (e.g. frozen peas) to soft tissue injuries reduces inflammation (avoiding direct contact of ice with skin). Small children dislike ice packs but a bowl of cool water can be tried.

**Pharmacological agents**

STOP For major injuries, seek senior advice and obtain IV access.

Figure 3.2 demonstrates a suggested algorithm for the treatment of mild, moderate and severe pain.

**Oral medication**

- **Mild pain** may be treated with paracetamol or non-steroidal anti-inflammatory drugs, such as ibuprofen. A combination of both is often successful.
- **Moderate pain** may be treated with codeine-containing preparations.
- **More severe pain** may be treated with oral morphine solution (Oramorph™) but this takes around 20 minutes to start working. A useful alternative with a quicker onset of action is intranasal diamorphine (see below).

**Intranasal analgesia**

Intranasal diamorphine has a rapid onset of action (2–5 minutes) and is highly effective. Its use is becoming popular for the following reasons: it acts much quicker than oral opiates, is well tolerated, avoids a needle and has marked anxiolytic effects. Its offset is around 30 minutes, by which time dressings or splints will have been applied and the child’s trust gained, so that, if ongoing analgesia is needed, insertion of an intravenous (IV) line is much easier and less traumatic (see the chart in Table 3.2 for full dosage and administration). 0.1 mg/kg is made up to 0.2 ml with water and dropped into the nostril using a 1 ml syringe with the head tilted back slightly.

**Inhalational analgesia**

Nitrous oxide and oxygen (Entonox™) can be provided in cylinders with a facemask or intraoral delivery system. It depends on the child’s cooperation and coordination, and understanding that it is self-activated. For continuous administration, see ‘Conscious sedation’ (below).

STOP Nitrous oxide should not be used for children with head injuries or injuries to the chest with a risk of pneumothorax.