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Safer children, healthier lives: reducing the burden of serious accidents to children

Ian Evans

Abstract
COVID-19 has placed huge pressures on clinicians and front line practitioners across the UK. The focus has been, understandably, on the day to day challenges that the pandemic has brought. But lockdown measures have also put a spotlight on safety in the home — a place where we have all spent so much more time. This is one place where there may be fewer safeguards and less protection from the risks of serious injury, especially to young children. Preventable accidental injury remains a leading cause of death and acquired disability for children in the UK. Moreover, it affects deprived children more. Hospital admission rates from unintentional injuries among the under-fives are significantly higher for children from the most deprived areas compared with those from the least deprived. To give every child the best start in life we need to create a better understanding and awareness of the injuries. To achieve this we need to prioritize learning from injury data and lived experience. We need to be linking with other partners and professionals to build strong collaborations for injury prevention. By working together and taking action we should be leading the way towards safer homes, roads and communities where children can become skilled for life, not scarred for life. This short article highlights what healthcare professionals working with children and families need to know about accidents and accident prevention in a higher income setting.

Keywords: accidents; button batteries; children; evidence; inequalities; injury; leadership; learning; partnership; prevention; safety

Introduction
Pandemic pressures have brought huge challenges to front line staff in hospitals and community services across the UK. In the face of new and unpredictable health impacts, they have had to respond to rapidly changing situations, every day, every shift and even every few minutes. It’s easy to see how routine incidents might attract less public attention. Yet children are still being treated for serious injuries. And children still die from preventable accidents.

Lockdown measures have put a spotlight on safety in the home — the one place where we have all had to spend so much more time, and the one place where there may be fewer safeguards and less protection from the risks of serious injury. The familiar saying, ‘as safe as houses’ simply does not reflect the experience of some children and families!

The worst nightmare … ?
It’s many parent’s worst nightmare rushing their child to hospital, gripped by anxiety about just how serious the accident may be. And it’s a fear experienced by tens of thousands of families each year.

At the beginning of 2022, a BBC news report quoted new NHS figures showing that thousands of people injured in household accidents were admitted to English hospitals during COVID-19 lockdowns. Many of these will have been children. Even more will have been treated by A&E departments.

As every clinician knows, accidents are part of growing up. Children need to explore and experiment. Minor scrapes and bruises are to be expected during an active, healthy childhood. But some children suffer the pain and scars of serious accidents that can alter their lives forever and tear families apart. The emotional pain and guilt can also last for years, if not a lifetime. The cost goes far beyond the considerable financial burden.

The solutions are often simple: safety equipment in the right place at the right time; a few changes to daily routines to take the hazards out of home life and to avoid the distress and suffering that they can cause to children and families.

“...Or the best start in life?
For most under-fives the home is their normal environment. Therefore accidents in the home and surroundings impact so much on children of this age. During these precious early years, babies and young children are also going through the normal stages and milestones of development — physical, cognitive and emotional.

Giving every child the best start in life is a key principle of the NHS. In the last year alone, influential work has been done through the Early Years Healthy Development Review and the Royal Foundation Centre for Early Childhood. The 'First 1001 Days' movement has published evidence briefs which reinforce the case for action to support young children, their families and their environments. We know that safer children will have better opportunities to lead healthier lives.

It’s no surprise that reducing accidents is one of the Early Years High Impact Areas for health visitors and the Healthy Child Programme. In an average year, 55 children under the age of five in the UK die due to unintentional injury, while 40,000 children are admitted to hospital as an emergency, and 370,000 children attend A&E departments. Almost 2,700 children are killed or seriously injured on our roads.
The challenge for all parents is to stay one step ahead of active, growing and naturally curious children. Of course that’s easier said than done. We know that parents can’t have eyes in the back of their heads! Accidents often happen when young children can suddenly do something they couldn’t do the day before: reaching for a hot drink, crawling to the stairs, discovering and opening the painkillers left in a handbag, finding that they can climb up onto the toy box or furniture.

“I didn’t know they could do that” is a familiar reaction for families. Every child is different, and develops differently. Every home is different too. But children need a ‘safe base’ in which to grow and develop. To stay one step ahead, we need to understand the risks that developing children face.

Recognizing the challenge, and making a difference

The Child Accident Prevention Trust (CAPT) was founded by two paediatricians who wanted to make a difference. They knew that the injuries they saw, day after day, could be prevented by better safety education or improved products. 40 years on, these values remain as important and relevant as ever as the charity focuses on reducing death, acquired disability and serious injury to children in today’s fast-changing world.

Certain serious accidents have, for the most part, become a thing of the past. Improved safety education, safer products, regulation and improvements in medical care have all played a vital role. Reduced exposure to risk — for example, children spending more time at home with computers — reduces injury, though at a health and wellbeing cost through reduced physical activity. That’s one side of the story. But other major risks and unintentional injuries have emerged to become the killers of the present and future.

Accidental injury and inequality: a ‘toxic mix’

Serious childhood injury takes its toll in other ways. Hospital admission rates for unintentional injuries among the under-fives are a shocking 38% higher for children from the most deprived areas compared with children from the least deprived. On and near our roads, children from the most deprived areas are three times more likely to be killed or seriously injured as a pedestrian and six times more likely to be killed or seriously injured as a cyclist.

The link between serious childhood injury and deprivation becomes even more disturbing in the light of current trends. New data from the Joseph Rowntree Foundation “showed a big rise in destitution with more than a million households (containing 2.4 million people, including 550,000 children) experiencing destitution in 2019, a rise of 35% since 2017, with modelling suggesting further increases during the pandemic.”3 The recent ‘Babies in lockdown’ report for Best Beginnings, Home Start and the Parent-Infant Foundation concluded that “Families already facing greater adversity were often hit hardest by the pandemic”.

We know that most parents want only the best for their children and are tireless in their efforts to achieve this. Good intentions are important building blocks and enable frontline practitioners to make the most of ‘teachable moments’ to introduce safer and healthier lifestyles. Yet as a study by the University of East Anglia for the NSPCC found, “if parents have a good relationship with children but their living conditions are not safe, then the child is not safe … Unsafe accommodation combined with lapses in parental supervision can be life threatening and can increase the risks of infant death, as well as deaths of older children from drowning, fire or accidental poisoning. Targeted support for families known to be vulnerable can help to prevent accidents.”3

To be effective in tackling the burden of childhood injury, and to develop meaningful targeted support, we need to consider how ‘parenting under pressure’ can add to the risks that many children face.

Too many parents and families face a ‘toxic mix’ of pressures. Financial hardship, unemployment, and — increasingly — rising energy, food and clothing costs may mean that there is little left over to pay for other essentials such as the safety equipment which can make such a difference to young children around the house. Poor or temporary housing and overcrowding create hazards inside while offering no safe play areas outside. Sometimes, adaptations to make the home safer are restricted by landlords.

Lone parenting, isolation, the lack of wider family support, mental health and many other issues add up to lack of confidence and a home environment where stress can undermine supervision. Ofsted has talked about the “‘COVID pressure cooker’ that has created additional risk for the youngest and most vulnerable children”.

As CAPT’s practitioner guidance says, “the challenge for parents, and for practitioners working with parents and children, is to help children develop their skills in identifying and managing risk — while protecting them from dangers they cannot yet understand.”

Focusing on priorities

To achieve this, we need to work together and focus on three priorities:

- **Learning** — from research evidence, injury data and statistics, lived experience, and an understanding of the community context and drivers for deprivation, while recognizing that safe homes should be a universal priority.
- **Linking** — working together and sharing with other partners and professionals to create strong national and local collaborations which support families and address the ‘wider determinants’ of children’s health, safety and wellbeing.
- **Leading** — using our knowledge, influence and first-hand experience to advocate for improved safety, education and regulation. Ensuring that child accident prevention is ‘hard wired’ into training and workforce development at all levels.

Learning: what are the main injury risks?

Robust prevention strategies depend on evidence and data. While local intelligence can be variable, it’s important to learn from good practice which is readily available.

In recent years, policy guidance has highlighted the key injury issues and it has also shown what works in prevention. In England, evidence-based public health guidance from the National Institute for Health and Care Excellence (NICE) provides advice, pathways and quality standards.4 Recognizing the challenges of obtaining reliable data, Public Health England (now the Office for Health Improvement and Disparities), working with CAPT and
ordinary domestic setting be so full of risk for a young child? The
today? Where are the domestic danger zones? How can an or-
with their professional bodies and with charities such as ours.
child's everyday lives as well as their safety in the home and
children's experiences need a story" if we are to understand and
the significance of the different factors which impact on
headline data can highlight priority issues for prevention, but
lived experience' also offers vital insights into the 'how' and
'my' as well as the 'what'. A public health annual report for one
local authority made the telling point that "numbers need nar-
ratives and statistics need a story" if we are to understand and
explain the significance of the different factors which impact on
So what are the accidents which injure and kill children
today? Where are the domestic danger zones? How can an or-
dinary domestic setting be so full of risk for a young child? The
evidence points to some clear priorities.

• **Choking, suffocation and strangulation** together make up
the leading cause of accidental death among under-fives,
especially for very young children under 12 months but
also with increasingly mobile and exploring toddlers. Causes
include hanging and strangulation from common items such
as window blind cords which should be secured out of
harm's way with a simple cleat. Choking from small objects
can be avoided by keeping them out of reach. The most
common risk is choking on food and drink — supervision is
always important (and a great way to spend time together!)
but as babies are gradually introduced to more solid food
this needs to be both appropriate to their stage of devel-
opment and cut up to make it safer to eat. Being alert to the
risks of suffocation from plastic bags and nappy sacks, and
unsafe sleeping arrangements is also important.

• **Falls** are the main cause of injury-related admissions for
under-fives. Falls from furniture are the most numerous but
there are also a significant number of falls from stairs and
steps. Falls from heights, such as open windows and bal-
conies are particularly serious, but young children can also
fall from high chairs, beds or while being carried.

• **Poisoning** accounts for a large number of hospital admis-
sions each year, especially from medicines accessible to
children. However there are also a variety of everyday
household poisoning hazards, such as laundry products and
carbon monoxide.

• **Burns and scalds**, often caused by hot drinks or hot bath-
water, are particularly serious injuries often requiring lengthy
periods of hospital treatment while also being disabling and
disfiguring. The thinness of a child's skin compared to an
adult's may sometimes be forgotten. Many parents are un-
aware that children have no automatic reflex to let go of
what's burning them, and so household items such as
cookers, kettles, irons, radiators and hair straighteners can
all pose risks.

• **Drowning** is the second leading cause of injury-related death
for under-fives in the UK. In the home itself, children left
unattended in bath water result in a number of deaths. Outside the home, ponds, paddling pools and swimming
pools and open water sites such as canals, rivers and bea-
ches pose real hazards for unsupervised children of all ages.

- **Fires**. Although the number of accidental house fires has
reduced, smoke, fire and flames still kill children each year.
The main causes include cooking appliances and misuse of
equipment, but smoking materials lead to the most fire-
related deaths. Many house fires attended by the fire and
rescue service are homes without working smoke alarms.
- **Roads and in-car safety**. Safety on and near roads, and in-car
safety from properly fitted car seats are essential when going
out and about with young children. In the winter months,
with darker mornings and evenings, visibility is also vital,
especially as they get older and start to travel independently
to school. Many schools have safe travel plans which
encourage greater road safety awareness.

### New and emerging risks: the invisible killers

Many injuries occur as a result of hazards which are, for the
most part, visible. Prevention is sometimes just a matter of
looking around the home wearing (as one local health team put
it) your 'safety glasses'! However there are other, newer
‘invisible’ killers, increasingly seen by clinicians and of
growing concern.

> "Foreign body ingestion is commonly seen in children aged 6 months
to 5 years. It is one of the top 10 commonest reasons to attend A&E
within the paediatric population in the UK. The majority of foreign
bodies pass through the gastrointestinal tract without causing any
injury and can be managed expectantly. However, certain objects
might induce significant harm if not recognized and managed emer-
gently. These include button batteries and magnets. Whereas recent
public health campaigns rightly focus on button batteries, we are
unfortunately now seeing a dramatic five-fold increase in the inges-
tion of strong magnets in the last 5 years. These magnets are sold
commonly as toys for children and have been promoted on social
media platforms. Almost half the children who ingested these have
required major surgery to retrieve the magnets. We strongly recom-
end a national government campaign to further increase awareness
of the dangers surrounding these foreign bodies".

Mr Hemanshu Thakkar MBBS, BSc, FRCS (Eng), FRCS (Paed),
Consultant Paediatric Surgeon, Paediatric General Surgery, Evelina
London Children's Hospital, St. Thomas' Hospital, London (personal
communication)

### Button batteries

We are seeing button batteries more and more in the home. They
are small, round, silver-coloured batteries that come in many
different sizes and types, and power many of the devices which
make our lives more convenient. You can find a list on the CAPT
Button Battery website hub ([https://www.capt.org.uk/button-
battery-safety](https://www.capt.org.uk/button-battery-safety)). Think toys, novelty items, gadgets and other
everyday objects which seem innocent in themselves. However,
while some battery compartments are secured, many batteries
are easy for children to get to.

If swallowed, most smaller button batteries should pass
through the body without a problem. But if a button battery gets
stuck in the oesophagus, energy from the battery reacts with saliva to create caustic soda. This is the same chemical used to unblock drains. This can burn through the intestinal mucosa to the main artery and lead to catastrophic internal bleeding and death. The chemical reaction can happen in as little as two hours. However, sometimes it takes days or even weeks.

Button batteries can cause life-changing injuries. There is a risk that the oesophagus is too badly damaged for a child to eat normally again or the vocal cords are too badly damaged for a child to speak normally again.

As the mother of one 8 month-old baby boy put it: “It turns out that this is one of the most damaging and dangerous things that my beautiful boy could have ever swallowed. It does not get much worse than this.”

Most of us think that, when a product we’re using stops working, the battery must have no power left and be ‘flat’. However, many ‘flat’ lithium coin cell batteries still hold enough charge to burn a small child’s oesophagus if they swallow one and it gets stuck there.

With many ingestions going unwitnessed and cases potentially asymptomatic, only an X-ray of the child’s neck and upper abdomen may determine if a battery is lodged in their oesophagus.

Magnets
Safety alerts have been issued amid growing concerns of the dangers posed to children by super strong magnets, a disturbing trend highlighted by clinicians. High-strength magnets can rip through a child’s gut if they swallow them, causing life-threatening injuries. Signs that a child might have swallowed a magnet include stomach pain, nausea and vomiting.

This is just an outline of the injury issues which impact on the lives of children and families. Far from being ‘just an accident’, these are often times of pain, stress and tragedy from which we need to keep learning — not least from our links to colleagues around us and in other areas and settings.

Linking: working in partnership for safer homes and families
There is good evidence that mobilizing existing services and working in partnership are key to injury prevention success and sustainability. Every person who works in the front line of health and family support can make a life-saving difference. By ‘making every contact count’ we can all be partners in prevention.

In June each year, CAPT’s Child Safety Week is a stand-out opportunity to put accident prevention on the local map … not just for a week but for 12 months of the year! King’s Fund research into using information to promote healthy behaviours found that consistent messages from multiple sources have impact. We know that talking to even a few people can result in a large number of conversations and a very large number of families receiving good advice. CAPT’s online information, webinars, visual aids, downloadable factsheets and other proven resources ensure that key facts about accident prevention can be put into the right places and the right hands. Our aim is to share safety without the small print!

Word of mouth and social media are increasingly influential channels for parental help and advice. In our work with local areas, multi-agency communication has become a key workstream within accident prevention strategies and action plans.

Learning and linking together also enables us to reach out more effectively. For example, the National Child Mortality Database (NCMD) gathers information on all categories of child deaths in England and has become a valuable source of information to inform improved education and engagement with parents and families.

“At the NCMD we’ve been really proud in the last year to see the evidence we gather having an impact on policy. From the JCVI’s advice on vaccinations for children and young people to safety reviews into potentially unsafe products, the comprehensive and timely data we hold is making a difference and contributing to the safeguarding of children. But we couldn’t command this body of evidence without numerous links — with child death overview panels all over England who report to us, with other data sources, and with organisations like CAPT who advocate powerfully for change. Our evidence also wouldn’t be complete without the lived experiences of such tragedies, shared by bereaved families, which lend weight and detail to the numbers, making them real. Collaboration is at the heart of what we do, and is a powerful tool helping us — and others — to improve and save children’s lives.”

Professor Karen Luyt, MBChB, PhD (Bristol), FRCPCH, NCMD Programme Lead and Professor in Neonatal Medicine at the University of Bristol (personal communication)

Action on accidents also happens when links are made to other key agendas and public health connections. In the UK local authority trading standards teams may be the first to encounter a new and dangerous product that has appeared in the community or via online marketplaces, challenging the common and incorrect assumption that “if I can buy it, it must be safe”. This shared knowledge contributes to the Office for Product Safety and Standards (OPSS) Product Safety Database weekly unsafe product report.

Leading: accident prevention ‘hard wired’ into local and national priorities

“Few groups are as invested in the health of children as paediatricians, so it’s crucial that we play our part in the prevention of accidents that are so devastating for our patients and families. On the national stage, on the local level, or in our daily clinical work, we must all work together to keep children safe.”

Dr Allison Low MBChB (Hons), MSc Child Health (Hons), MRCPCH, Consultant Paediatrician, Barnsley Hospital NHS Foundation Trust (personal communication)

Providing leadership is the number one priority to enable effective child accident prevention policies and practice to be ‘hard wired’ into local and national strategies. We see leadership in action when local areas appoint an accident prevention...
coordinator to bring together partners and plans which will make a difference to children and families in their communities.

We see it when government departments and agencies act to highlight new and emerging risks. For example, when the Healthcare Safety Investigation Branch (HSIB) carried out an independent investigation into a button battery fatality and made key recommendations on public awareness, product safety and clinical decision-making.8

We see it when the Office for Product Safety and Standards issued a UK Safety Alert on the risks of swallowing small high-powered magnets and when industry, retailers, government and product safety experts worked together to develop a fast-track safety standard for button batteries. Leadership creates momentum, such as the Ministerial Round Table on button battery safety leading on to a stakeholder working group.

We see it when a marked rise in deaths and serious injuries to children from falling fire surrounds prompted a regional information sharing alert in the North-West of England.

We see it when deaths from a home hazard such as domestic blind cords, lead to powerful collaboration and action involving safety charities, retailers, manufacturers, standards bodies and government.

And we see it every time CAPT runs a training course bringing together staff with different backgrounds, skills and experience. The awareness and insight gained in workforce development can then be shared more widely within local settings and communities.

In conclusion

Learning, linking and leading together create the ‘golden thread’ running through effective child accident prevention. But action on this scale needs to start with a big ambition. An ambition to make a difference on the clinical and community front line; to work together to reduce and prevent childhood injury and death, and, as with button batteries, to gain a better understanding of symptoms which can lead to earlier diagnosis. We owe it to the children, families and communities that we work with to make sure that we have the knowledge and understanding to give the right help at the right time.

These are the challenges but also the opportunities for action wherever you are. We hope that this short article will help to drive your ambition. Readers are encouraged to talk to us to find out more.

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"As a children's emergency consultant my job is filled with looking after unwell and injured children. As a paediatrician and a mother I want to try and protect children from harm and have worked hard with my local contacts and through CAPT to highlight the dangers of button batteries in particular. Many grandparents wonder how their own children survived in an era without seatbelt legislation or cycle helmets and some wonder if the pendulum has swung too far the other way and that we now wrap our children in cotton wool. I guess the fact is that there is a balance to be had - children need to play, to explore and to learn what they are capable of. However we also need to realise that now scooters come with engines, cars drive faster and there are more on the road and society as a whole is more distracted and moving at a faster pace. As paediatricians we need to encourage families to keep children safe while allowing them the freedom to thrive. Many of the accidents we see in the ED happen when children are out of their 'normal' environment or in large gatherings where everyone thinks that someone else is supervizing the toddler. I'd encourage carers to think about this and make sure you always know who is keeping an eye on an under 5. And please - make sure any button batteries you have are locked away and disposed of immediately in a battery recycling station once removed. If you think your child has swallowed or inserted a button battery into their nose or ear - get to your local ED immediately so we can sort it out before it causes any damage.”

Rachel Rowlands MBCHB, MRCPCH, CED Consultant Leicester Royal Infirmary (personal communication)

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