

# **On reducing childhood trauma: child accident prevention – the poor relation of preventive health**

## **A tribute to the late Professor John Biddulph OBE**

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### **Introduction**

Trauma in childhood remains one of the unmet challenges of medicine in the twenty-first century. Indeed, injury and death in the childhood years remains a major issue for all societies. All nations have been slow to include child trauma in the medical model of disease prevention (1). In tropical nations, reduction of death and disability rates from accidental trauma has never been afforded resource funding proportionate to that aimed at reducing the other and more 'traditional' killing diseases such as prematurity and obstetric complications, malnutrition, gastroenteritis, pneumonia, malaria and measles (2,3).

Improvements in child health are particularly cost-effective for developing nations (4). In his 1992 Howard Williams Oration, the late Professor John Biddulph noted that sick children in developing countries usually suffer from several diseases at the one time (5). It is the universal experience of all who have worked with such children that one ubiquitous ill is childhood trauma.

Paradigms for the prevention of trauma in childhood are well understood (6); but their implementation has proved to be insuperably difficult in many societies (7), both in developed and developing nations; and in rural and urban-dwelling families (8). Several thousand children die each year in the United States from handgun incidents; and toddlers still drown in their scores each year in backyard water accidents in Australia. Child deaths from post-war landmine injuries are still

occurring in their hundreds each year (9,10), a rate which in spite of the 1997 Ottawa Convention will not decrease unless further resources are provided for its containment. The major challenge to society generally and the health professions specifically is to bring child trauma 'into the fold' of preventive medicine. Such will enable proven medical models of public health to be applied to trauma, with the anticipated benefit already proven in the case of infectious diseases.

### **Child safety – public health models**

Child accident mortality, no less than any other public health issue, requires a preventive medical model for its solution, in whatever society child mortality is a problem. Such a solution has four parts, none of which is mutually exclusive. These four principles are:

- Improved parental and public awareness of risk;
- The building of a safer physical environment - an ergonomic approach;
- Safety legislation and regulations, effectively policed; and
- First Aid instruction, paramedic facilities and increased hospital care.

The last of these is a form of secondary prevention (11), which is important, though for many such a principle is illogical – "it is better to keep children out of water hazards in the first place than to resuscitate them after they have almost drowned" (12). Each of these approaches is nation- and region-specific.

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Each is of varying efficiency and utility, but the principles remain universal.

### **Public education, awareness of threat and parental empowerment**

An educational approach to injury reduction depends, in turn, on two themes: a) knowledge of risk; and b) empowerment of parents. There are relatively few published studies of accidental trauma in Papua New Guinea (13-16) and no national disease-specific child trauma data. Personal experience suggests that grouped national mortality data – 1.1 deaths per 100,000 for ‘accidents and violence’ in the 1 month to 14 year age group (17) – is unrealistic; although that for non-fatal trauma (annual admission rates of 145/100,000) is more plausible and could be used as a baseline for monitoring trends following the implementation of injury-reduction stratagems.

Child trauma deaths in Papua New Guinea result from road trauma, burns, drowning and violence. Road trauma results from pedestrian run-downs and from infants and children sitting unrestrained on the platforms of tray-trucks involved in inter-vehicle crashes, single vehicle impacts and rollovers. There is no short-term or tactical solution to these problems in Papua New Guinea; but a vital part of their long-term reduction is the provision of progressively improved basic medical education for all. A very important theme in this context is, in John Biddulph’s words, “emphasis on female literacy and improving the status of women...leads to the better empowerment of parents, especially mothers” (5). Currently, the percentage of the total number of deaths occurring before 20 years of age is 45% in the world’s poorest countries and 1.5% in the richest nations (18). The biggest cause of such mortality in pre-school (1-5 years) children in Australia is accidental trauma (6,19). Although relatively less common than deaths from vaccine-preventable diseases in developing countries (3,5), the absolute risk of death or disability is currently highest in developing nations. Such need not be a function of national wealth; and exemplars from Kerala State in India, for example, show that improvement in female literacy and equity have a great impact on life expectancy in childhood (5,20).

Social class differentials in childhood trauma rates from the Brisbane Drowning Study have demonstrated that children of informed, empowered parents have lower risks for trauma. Educational campaigns and promotions to increase risk awareness are not the most efficient way to reduce child trauma mortality and morbidity; but for many types of trauma – burns and drownings (21) for example – such public education campaigns may be the only stratagem of primary prevention.

In Papua New Guinea, the opportunity exists for using the medium of safety messages as an educational tool in its own right. That is, the medium may become the message. Health educational campaigns at village level, in my experience, have been most helpful in the health education and perhaps in literacy training of parents. A concerted campaign, using current media and the communication facilities which are available, offers considerable long-term promise for reducing the current high injury rates.

### **Regulations for safety**

Educational approaches and ergonomic developments are effective in reducing some types of child trauma; but many studies in developed nations have shown that safety legislation is the most efficient (22). Sometimes, a regulatory approach is the only way child trauma rates can be reduced (23). In Australia, laws rather than informal advocacy were ultimately required to reduce the incidence of lead poisoning among children; and safety legislation was ultimately needed to reduce an epidemic of child drowning which involved toddlers from the early 1970s when cheap backyard swimming pools first became available (6,19,23).

In Papua New Guinea enlightened regulations can save children’s lives; but any such legislation cannot be introduced in a vacuum – it needs the implementation of major public awareness programs and the ergonomic principles of creating a safe physical environment as well. Following the courageous advocacy of Professor John Biddulph, Papua New Guinea led the developing world in legislation to outlaw the

general sale of infant feeding bottles, rubber or plastic teats and pacifiers. In pioneering legislation to prevent infant deaths from gastroenteritis, feeding bottles and teats can be purchased, by law, only on the production of a registered health worker's certificate (24).

In developing countries, international law will reduce the risk of injury from anti-personnel landmines (10); and national regulations can reduce road trauma and some other types of injury such as deafness and blindness from fireworks. However, no regulation will reduce the current problem with burns or drowning, both of which are common in Papua New Guinea. The three highest ranked causes of road trauma are speed, anti-social behaviour and alcohol, all of which have their target in behaviour modification. In this context, enforced regulations and laws will do much to reduce road trauma, but require coexistent public educational campaigns to be truly effective.

### Conclusion

A review of major invited manuscripts published in the mid-twentieth century enumerating the problems of paediatrics in developing countries has shown that the problem of child trauma is rarely mentioned (25,26). Personal experience in Rwanda (9,27), Papua New Guinea (2) and several other countries in South-East Asia, leads me to maintain the advocacy for including child trauma in all programs to reduce child morbidity and mortality; for a dead or disabled child points to the need for prevention, whatever is the agent of his or her distress. Reducing child trauma is currently a more difficult problem than reducing vaccine-preventable diseases, the former depending significantly on behaviour modification and the progression of a society's outlook to the point where a defeatist attitude towards child trauma is rejected.

In the world of the law, if hurt is perpetrated on a victim, allowable defences include mistake, accident, self-defence or involuntariness (28). Such defences can no longer operate in the fight against child trauma and its consequences.

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