Handguns as a pediatric problem

Katherine K Christo, Tom Christo

Handgun injury is a major cause of morbidity and mortality in American society, particularly among young people. Large numbers of children are affected by handgun violence through the loss of fathers, brothers, and other relatives. Young children are injured, and occasionally killed, in handgun “accidents”. Some young children and many adolescents are murdered with handguns. Like infant mortality, handgun violence in the United States is a medical as well as a social problem. Because of the great lethality of handguns and their very limited ability to provide personal protection, handgun injury can best be reduced by making handguns less available. Handgun control cannot reduce rates of crime or interpersonal assault, but it can reduce the frequency and severity of injury arising from these situations toward the much lower levels found in other countries. The involvement of children in the United States handgun injury epidemic warrants effective pediatrician involvement in efforts toward handgun control.

Handgun death and injury in the United States

The role of handguns in American life is virtually unparalleled in other countries. One week in a large city in the United States can produce more handgun trauma victims than other countries will witness in a year. Firearms rank as the second leading cause of fatal injuries in the United States, while there are relatively few such deaths in other countries. The comparison is stark: over 10,000 handgun homicides in the United States compared to 52 or fewer in other developed countries. In some portions of the United States population, particularly young black men, handgun death rates match or exceed those for motor vehicle injury, the overall leading cause of death among the young.

After a steady decline from the 1930s to the 1960s, the last two decades have witnessed a striking rise in gun-related homicides. Baker et al. note that “between 1960 and 1980 the death rate from firearm homicide increased by 160% (from 2.6 to 6.8), while all other homicides increased by only 85% (from 2.0 to 3.7)”. The most rapid rate of increase has been in the 5 to 9 year age group.

In 1982, close to 33,000 deaths annually in the United States resulted from firearm injuries: homicides, 13,841; legal intervention, 276; suicide, 16,575; unintentional infliction (accidents) 1,756; and undetermined, 540. Since these gun deaths disproportionately involve young people, they constitute a major cause of lost years of potential life. In addition, according to the “best available national estimate” there were 155,000 non-fatal firearm injuries in 1972. There are no exact figures on the percentage of all fatal and non-fatal injuries attributable to handguns, as opposed to long guns. However, FBI statistics indicate that 80% of all firearm homicides involve handguns. Similar data are not available for suicides and accidental injuries, but there is good evidence that recent increases in suicide rates have been largely due to handguns. Although they are believed to constitute only one fourth of all firearms in the United States, handguns account for three fourths of firearm homicides as well as the bulk of other deaths caused by firearms.

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Table 1 Six leading causes of death, children and youths, 1981, by age

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>&lt;1 year</th>
<th>1–4 years</th>
<th>5–14 years</th>
<th>15–24 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain conditions originating in the perinatal period</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Accidents and adverse effects</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Congenital abnormalities</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Malignant neoplasms</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Diseases of the heart</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Homicide, legal intervention</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Suicide</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Pneumonia and influenza</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>All causes</td>
<td>1207.3</td>
<td>60.2</td>
<td>29.4</td>
<td>107.1</td>
</tr>
</tbody>
</table>

* Rate per 100 000 population.

Handguns and pediatrics

Gun Orphans

With 33 000 firearm deaths each year in the United States, a large and growing number of American children are forced to confront the loss of a gun-injured parent or other loved one. Added to this are the parents and others temporarily or permanently damaged by gun injuries. The impact of such trauma on children and their families has become familiar to many pediatricians. The epidemiologic and developmental features of this most widespread pediatric aspect of handgun violence remain completely unexplored.

Data Deficits

The devastation caused by handguns among children and adolescents occasionally receives media attention, for example, when a high school basketball superstar was murdered in Chicago in late 1984. However, systematic and sustained attention to the problem is notably lacking. For example, in an effort to bring together available data on childhood handgun deaths and injuries for this article, calls were made to the Consumer Product Safety Commission, National Safety Council, the National Coalition to Ban Handguns, Handgun Control, Inc, Illinois Citizens for Handgun Control, the National Center for Health Statistics (NCHS), and the Illinois Criminal Justice Information Authority. None of these agencies had analysed data concerning childhood handgun injuries, and only two had data available for independent analysis. The NCHS data are based on death certificates, which do not distinguish the type of firearm involved in the deaths. Those data indicate that unintentional firearm injuries decreased in the period from 1968 to 1979, while suicide and homicide firears deaths increased markedly, indicating homicide is now a leading cause of death in childhood, adolescence, and early adult life. Firearms are the leading means of homicides from early adolescence. In the Cleveland study, 57% of homicides of children five to 14 years old were due to firearms.

Table 2 and fig 1 show the age and firearm-type distribution of the 1179 firearm homicides of persons under 20 years of age in Illinois from 1973 to 1983. The overwhelming majority of the homicides were due to handguns. Eighty-seven per cent of the handgun deaths occurred in the 15 to 19 year age group; the age distribution for the long-gun deaths is comparable. As fig 1 shows, the rise in handgun deaths actually began at age 12, suggesting that access to handguns or involvement in social contact......
situations involving handguns occurred very early in adolescence. Table 3 shows that non-white males were particularly affected by homicidal gun violence. The perpetrators and circumstances of the child gun homicides are shown in Table 4. It is apparent that the classifications used to tabulate these deaths are designed for adult victims, with the result that many cases appear in the unilluminating category of “other” for both perpetrator and circumstances. Further study is clearly needed regarding adolescent handgun homicide deaths and the circumstances that promote them.

Guns are a major factor not only in adolescent homicide, but in adolescent suicide as well. Suicide rates in adolescence have increased over the last 50 years, with disproportionate increases in firearm suicides, such that handguns now account for approximately two thirds of adolescent suicides. Indeed, most of the recent increase in suicide rates among young people is attributable to firearms, mostly handguns. The much higher rate of use of firearms among suicide deaths is due to the great “effectiveness” of handguns, which— unlike other means—do not allow opportunity for rescue or reconsideration.

Several factors may contribute to the use of guns by older children. Television and movies acclimate viewers to high levels of violence by portraying the world as threatening, and depicting guns as solutions to interpersonal and societal problems. By presenting an implausible number of people surviving gunshot trauma with trivial results, the entertainment media minimize the dangers of gunplay and desensitize children (and adults) to the enormity of each death and injury. Thus, while children learn early that lions are dangerous and must be caged in zoos, the media provide no such message about the family handgun, often kept in an unlocked drawer at the bedside.

How can children be protected?

Substantial variations in rates of handgun violence among countries and within the United States suggest that handgun injury can be reduced. Compared to the 10 728 verified handgun homicides in the United States in 1979, there were 52 or fewer such deaths during the same year in Canada, Great Britain, Japan, Sweden, Switzerland, and West Germany. The proportion of the population owning guns in different regions of the United States generally parallels the percentage of homicides involving firearms. Similar correlations appear to exist between levels of handgun ownership and suicide rates.

Since firearm injury reflects handgun availability, it is reasonable to expect that all hand-

Table 3 Handgun homicides of Illinois children, 1973–83

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>% Non-white</td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>11</td>
<td>45</td>
</tr>
<tr>
<td>5–9 years</td>
<td>9</td>
<td>67</td>
</tr>
<tr>
<td>10–14 years</td>
<td>47</td>
<td>66</td>
</tr>
<tr>
<td>15–19 years</td>
<td>734</td>
<td>64</td>
</tr>
<tr>
<td>Total</td>
<td>820</td>
<td>64</td>
</tr>
</tbody>
</table>

* In Chicago only, white Latins included with white; outside of Chicago, all Latins included with non-white.
* Includes age unknown.

Table 4 Handgun homicides of Illinois children, 1973–83, with regard to perpetrator and circumstances, by age

<table>
<thead>
<tr>
<th>Perpetrator</th>
<th>&lt;5 years</th>
<th>5–9 years</th>
<th>10–14 years</th>
<th>15–19 years</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
</tr>
<tr>
<td>Stranger</td>
<td>2</td>
<td>15</td>
<td>2</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Friend</td>
<td>7</td>
<td>54</td>
<td>4</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>Parent</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Other family</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>15</td>
<td>2</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>All</td>
<td>13</td>
<td>99</td>
<td>11</td>
<td>99</td>
<td>37</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Circumstances</th>
<th>&lt;5 years</th>
<th>5–9 years</th>
<th>10–14 years</th>
<th>15–19 years</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent-child</td>
<td>1</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>Robbery, burglary, suspect felony, other felony</td>
<td>0</td>
<td>4</td>
<td>31</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Drug offence or gangs</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>83</td>
<td>8</td>
<td>62</td>
<td>40</td>
</tr>
<tr>
<td>All</td>
<td>12</td>
<td>99</td>
<td>13</td>
<td>101</td>
<td>59</td>
</tr>
</tbody>
</table>

* Missing observations: perpetrator, 428; circumstances, 83.
* Other: spouse-spouse, other family, gambling offence, lovers’ triangle, money argument, other arguments, alcohol brawl, drug brawl, sniper attack, other non-felony, unknown.
gun injuries can be reduced by restricting availability via handgun control.

Handguns are hazardous because they rapidly transmit deadly force. This hazard is enhanced by the fact that they are easily obtained, concealed, and used. As for all injuries, the two available injury control approaches include environmental modification (mandated changes in gun availability, structure, or use) and education (to promote changes in gun use behaviours). Until recently, emphasis has been on education. As Waller noted:

Registration of handguns is vehemently opposed by the National Rifle Association, which instead promotes gun safety programs predominantly aimed at hunters, although even in rural areas only a minority of the shooting involve [sic] hunting. . . Education of parents is recommended by some groups as the best approach to firearm safety in the United States. To date, however, there is little or no evidence that this approach has been of any value.

Recognized principles of injury control can guide efforts to impede the transfer of deadly force by handguns. The application of Haddon’s 10 generic prevention approaches to handguns is displayed in table 5. Most current approaches to handgun violence have focused on strategies for effective emergency response and for effective medical care and rehabilitation, measures which minimize but do not prevent injury. Promising legislative approaches to prevention that are particularly likely to protect children include: removing handguns from the home environment (separation of guns and potential victims); restricting the possession of guns and ammunition (preventing the marshalling of potentially injurious agents or reducing their amounts); prohibiting the manufacture of ammunition (preventing the marshalling of potentially injurious agents); prohibiting the sale of any gun that can fire more than once without reloading (modifying the release of the agent); restricting muzzle velocity; improving trigger locks; and restricting the sale of ammunition to plastic bullets (modifying basic structures). Maximal success of these approaches would depend on active enforcement and on evolving changes in social norms (for example, over time, keeping a gun in a household with children should be seen as obviously reckless).

Firearm regulation can be applied at a number of different points in time: (1) the time of manufacture or importation, (2) the time of sale or transfer, (3) the period of possession, and (4) the time of use of the gun.

A variety of specific handgun control proposals have been made, including restrictive and permissive licensing; requiring a license or permit to purchase, carry, or possess a handgun; total or partial registration; notice of transfer; waiting periods; stricter licensing of dealers; certification of proficiency; mandatory sentences for illegally carrying a handgun; and a ban on the manufacture, sale, and importation of handguns or handgun parts. The more restrictive the proposal, the more likely it is to reduce handgun violence.

Obstacles to handgun injury control
Just as identifiable sources of contagion and specific host factors support epidemics of infection, identifiable factors promote the epidemic of handgun violence in the United States. One such factor is the set of cultural myths which surround the role of the handgun in American history. While recent research has contradicted the notion that the American West was settled by men who were fast on the trigger, this image is deeply entrenched in the minds of many Americans and reinforced by movies and television.

However, even more critical to fostering gun use is ease of access to handguns, as summarized in table 6. In most communities, there are few impediments to the free purchase and ownership of these deadly weapons.

An obstacle to progress in controlling handguns is the fact that much of the public debate concerning handguns has dwelled on inaccurate claims and assertions about handguns, especially as regards the protection afforded by handguns and the constitutional “right” to possess handguns (see discussion below). This is in sharp contrast to the public debates concerning child restraints or childproof drug packages, but it is similar to the intermittent debate over fluoridation of municipal water supplies. Two fallacies are particularly important to the pro-gun position put forward by gun manufacturers, the National Rifle Association, and other promoters of gun use: (1) that handgun ownership protects the gun owner and his/her family, and (2) that guns are no more dan-
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morbidity rates, but current laws are neither

gun control policy is probably necessary for

in contiguous areas. A coordinated national

patchwork of controls with contradictory rules

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cally from one another, however, the result of

private possession of handguns.

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ordinances. In November 1985, a solid major-

and alarming statistics by adopting gun control

the country have responded to citizen concern

The success or failure of current e

pediatricians need to be involved in e

ccessfully used in protecting that household.22–24

In fact, guns are six
gerous than other weapons. In fact, guns are six
times more likely to kill or injure a member of

the owner’s household than they are to be suc-

cessfully used in protecting that household.22 In

addition, guns are such efficient means of

mobilizing and transferring destructive force

that each gun assault is at least five times more

likely to result in death than an assault with the

next most deadly weapon, a knife.22–24

The problem of handgun injury is apparent

to the American people, among whom there is

strong sentiment for curbing handgun avail-

ability. Public opinion polls have consistently

shown that the majority of Americans favour

some degree of handgun control and regulation.16,9,14–16 However, the pro-gun lobby has,

until recently, succeeded in blocking most

gun control measures.15 In recent months and

years, a growing number of localities around

the country have responded to citizen concern

and alarming statistics by adopting gun control

ordinances. In November 1985, a solid major-

ity of voters in Oak Park, Illinois supported

continuation of that community’s ban on the

private possession of handguns.

Because local gun ordinances vary dramati-

cally from one another, however, the result of

the recent wave of control measures is a legal

patchwork of controls with contradictory rules

in contiguous areas. A coordinated national

gun control policy is probably necessary for

effective reduction of handgun mortality and

morbidity rates, but current laws are neither

strong nor coordinated.20,21

Overcoming the obstacles: a role for pediatricians

The success or failure of current efforts to

restrict handgun use will have a significant

effect on children, who currently face a future

in which handguns are commonplace. Physi-

cians need to be involved in efforts to

understand the causes of handgun deaths and

the ways to reduce their number. Almost a
decade ago Browning3 pointed out that:

It is because of the direct parallel between previ-

ously defined public health problems and the

emphasis on prevention that it is now compellingly

clear that we need to redefine our approach to

handgun violence and its consequences as one of our

major public health problems. As such, it is a mat-

ter of appropriate concern to physicians and organ-

ized medicine and one in which they should have a

major interest.

A useful model for the role that pediatricians

could play in seeking to reduce handgun

violence is their role in reducing motor vehicle

crash injury. This has included education (both
directly, by discussing the importance of

restraint systems with parents, and indirectly,

by conveying the same message to the public at

large), advocacy (developing support for and

testifying on behalf of child restraint legisla-

tion), and support (providing expertise and

pressure to assure that education and legisla-

tion can and will be translated into the desired

protective actions).

Similar activities are called for in tackling the

handgun problem. The American Academy of

Pediatrics has begun this work by adopting a

strong statement supporting handgun control.27 Pediatricians must become informed

spokespersons concerning the issues involved

in the handgun debate. Educating parents

regarding the dangers of handguns serves a
dual purpose: it eliminates that particular dan-
ger in some homes, and it fosters support for

legislative approaches to this health problem.

In this and other ways, pediatricians and other

physicians are most likely to affect local gun

control efforts, which can establish the prec-
edent and momentum needed to achieve the

needed uniform state and nationwide controls. The most fruitful approaches in any particular

area will depend on local conditions, including

existing legislation and extent of popular

support. To date, the most far reaching local

approaches have been handgun bans in Morton

grove, Evanston, and Oak Park, Illinois.

Handgun control groups, which exist through-

out the United States, can use physician exper-
tise and can help to orchestrate legislative

efforts.

As with child restraint legislation, a major

aspect of advocacy must be dealing with argu-

ments against the legislation. For handguns,

the predominant counterargument involves

physical insecurity. For poorer communities

in particular, this is partially the result of

inadequate police protection. Physicians must

emphasize the fact that, wishes to the contrary

notwithstanding, handguns in fact reduce the

security of home and neighborhood; physical

insecurity must be dealt with in more rational

and effective ways. Another frequent counter-

argument to handgun control is the assertion

that the Second Amendment to the United

States Constitution (providing that “A well

regulated militia being necessary to the security

of a free state, the right of the people to keep

and bear arms shall not be infringed”) prohib-

its restrictions on the possession of firearms. In

fact, there is a well established history of

United States Supreme Court decisions reject-

ing that position in favour of the view that the

Second Amendment protects a collective, not a

personal, right to bear arms.28

Summary

Handgun injury is a major cause of morbidity

and mortality in American society, particularly

for young people. Large numbers of children

are affected by handgun violence through the

loss of fathers, brothers, and other relatives.

Young children are injured and sometimes

killed in handgun accidents. Some children and

many adolescents are murdered with hand-

guns. Because of their great lethality and very

limited ability to provide personal protection,

the great burden of handgun injury can best be

reduced by making handguns less available.

Handgun control cannot reduce rates of

crime or interpersonal assault, but it can be

expected to reduce the frequency and severity

of injury which grows out of these situations to

levels closer to the much lower ones found

in other countries. Pediatricians can contribute to

this effort, as they have to the efforts to reduce
the morbidity and mortality from poisonings and motor vehicle passenger injury.

The authors wish to thank L S Miller of the Illinois Criminal Justice Information Authority for providing data, Jan Chara- monte for technical assistance, Ramona Russell for secretarial assistance, and Rand Hayes for artwork.


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**Children “safer to avoid road crossings” says editor of well known safety journal!**

Professor Barry Pless, whose name can be found on front cover of this journal, seemed to suggest that children should not use pedestrian crossings, when speaking to reporters at the conference associated with the launch of the supplement that accompanied this journal in December 1998. His remarks, reported in London’s *Evening Standard*, did not find favour with road safety expert David Rogers of the Royal Society for the Prevention of Accidents (RoSPA). Could this be a matter of not believing everything you read in newspapers or were our editor’s remarks misunderstood? Over to you, Barry.

Editors note: Bad reporting or misunderstanding? Both! What I tried to say was that children should not assume road crossings were safe. I said that they must make eye contact with drivers, no matter where they cross, because motorists cannot be counted on to always stop, look, and respect child pedestrian rights.

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**Skaters halt Paris traffic**

Hot blooded young Britons are racing to Paris for the weekend, not for candle lit dinners and romantic strolls but to join thousands of French roller skaters hurling at full pelt through the city (reported *The Times* in January). It seems that some 7000 people gather in the Place d’Italie each weekend and then speed for two hours and 17 miles, halting traffic. The event has gained an international following with skaters from across Europe.

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**Ski injury costs soar**

It can cost your or your insurer from £2500 to £25 500 if you break your leg while skiing. Perhaps surprisingly, the most expensive country is not the US but Switzerland. These are the findings of a study by British travel insurer, Home & Overseas. However, the cost of a five day stay in hospital in the US was almost four times that in most European ski areas (*The Sunday Times* (London), January 1999).