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The International Small Arms Situation: A Public Health Approach

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Introduction

Whether emergency room physicians, trauma surgeons, psychiatrists, pediatricians, or family doctors, physicians throughout the world bear witness to the terrible consequences of small arms on human health. A physician stemming a bleed in the chest of a gunshot victim is not concerned with whether the shooting was a suicide, an accident or a homicide, whether it took place in a conflict situation or in peacetime, or whether the perpetrator was a gang member, a soldier, a non-state actor, or a law-abiding gun owner. What matters to the physician is whether bullet struck bone, whether bone shattered, whether metal and bone splinters punctured vital organs or blood vessels, or severed the spinal cord—in short, whether the patient will survive and if so, what his or her future health will be.¹ Medical treatment has advanced in the last decade, but physicians have long recognized that preventing death and injury in times of war² or peace³ can produce more significant benefits than an exclusively treatment-based approach.

Public health approaches to the small-arms issue based on evidence and science involve various disciplines of expertise, including epidemiology, but also psychology, sociology, criminology, economics, education, and medicine. A harm-reduction approach begins with the premise that the weapons, by their very nature, are designed to kill, harm, or threaten other beings. Given the accepted utility of legal firearms in society, the goal is typically not a ban, as was the case with antipersonnel mines, but regulation or “harm reduction.”

This public health approach to injury might begin with a careful analysis of the epidemiology and etiology of the injury and concentrates on the causal factors that produce the injury. The injury-prevention model examines the interactions between the environment (both physical and social), the host (the victim), the agent (the firearm), and the vector (the ammunition). The focus is on understanding the causal chain and breaking the chain at its weakest link with “fact-based” interventions.⁴ Interventions may

address the underlying factors, for example, programs to improve the social and economic conditions that give rise to violence. Interventions may focus on reducing the severity of violence—efforts focused on supply of weapons, for example, which attempt to control exports or access to small arms. Finally, interventions may focus on “treatment”, trauma care, rehabilitation, and reintegration.⁵

This model is a useful one for understanding the problem of small arms and the approaches to reducing their negative effects on health. This chapter will consider:

1. Basic Concepts
2. The Health Effects of Small Arms
3. Causal Factors
4. Proliferation of Legal and Illegal Small Arms
5. Interventions
6. Evaluations
7. Conclusions

Basic Concepts

What Are Small Arms?

Broadly speaking, small arms are those weapons designed for personal use. They are lightweight and would include “man-portable” weapons such as personal and police firearms such as revolvers and self-loading pistols, rifles and carbines, light machine-guns, sub-machine guns. (e.g., The Uzi of Israel, and the HK MP5 of Germany) and assault rifles (e.g., the Russian AK-47 “Kalashnikov, the US M-16, the Belgian FAL, and the German G-3).⁶

Light weapons are those designed for use by several persons serving as a crew. Light weapons include heavy machine-guns, hand-held under-barrel and mounted grenade launchers, portable anti-aircraft guns, portable anti-tank guns, recoilless rifles, portable launchers of anti-tank missile and rocket systems, portable launchers of anti-aircraft missile systems, and mortars of calibers of less than 100mm. Ammunition and explosives form an integral part of small arms and light weapons used in conflicts, and include cartridges (rounds) for small arms, shells and missiles for light weapons, anti-personnel and anti-tank hand grenades, landmines, explosives, and mobile containers with missiles or shells for single-action anti-aircraft and anti-tank systems.

The Small Arms Survey estimates there to be stockpiles of at least 688 million small arms and light weapons in the world, of which about 59% are in legal civilian possession, 38% are in the arsenals of national armed forces, 3% are held by police forces, and, most surprisingly, far less than 1% are in the hands of insurgent groups.⁷

People generally believe that military, law enforcement, and selected security officials need weapons in order to protect society. Civilian firearms ownership is also considered by many to be legitimate for sports, recreation, and wildlife control, including such activities as target-shooting and managing pests. Aboriginal peoples (Native Americans) in North America see hunting as a tradition, a way of life, and, for many, even livelihood. When law enforcement is unable to adequately defend certain individuals, possession of handguns might be considered as acceptable for purposes of self-defense. In most developed countries, however, this is rare. The United States is the notable exception.

In conflict and in crime, small arms may be used by those wishing to use force to achieve their aims. Small arms are easily available and cheap. AK-47s, for instance, are manufactured in over 40 countries and can be purchased for as little as \$10–12 in Afghanistan and Angola.⁷ They are durable, easy to produce, easy to operate, and often may be concealed easily and trafficked past legal restrictions where these exist. Most importantly, they are extremely deadly and provide the user with a high capacity for killing. A single gunman with an assault rifle can slaughter dozens of people in a matter of minutes.⁸

It is important to note that the reliability of weapons-availability data varies considerably. In highly regulated states, official estimates of legally licensed firearm owners and registered firearms may be reasonably reliable, but estimates of illegal weapons in circulation are difficult. In other cases, estimates are based on surveys such as the International Crime Victimization Survey, but these estimates can vary significantly for a single country.⁹ Apart from surveys, it has been suggested that, in industrialized countries, one of the most reliable ways to estimate firearm ownership is to examine suicide data.¹⁰ The Small Arms Survey considers there to be about 230 million weapons in the US, 98% of which are in civilian possession, 0.3% in police possession, and 2% in military possession.¹¹

In less developed countries, the capacity for collecting consistent, reliable, and relevant data on small arms for evaluation, is limited by various cultural, economic, infrastructural, and logistical factors, especially in conflict and post-conflict situations. In many post-conflict countries in Central America and Africa, where only a tiny percentage of guns are registered, estimates of the total in circulation vary widely. The Small Arms Survey cites many examples of wild projections of number of arms, in particular, local claims in Mozambique of 6 million AK-47s in circulation, and widely reported figures of the wildly implausible 60 million weapons manufactured in Yemen.¹⁰

The Health Effects of Small Arms

Overview

An estimated 300 000 people die annually due to firearms used in armed-conflict situations. Together with the estimated 200 000 people who die each year from firearms used in non-conflict situations,¹² these deaths would amount to almost one death each and every minute. Putting these 500 000 deaths per annum in a public health context ranks them ahead of the mortality and morbidity caused by landmines and only slightly behind other public health priorities in terms of damage, such as HIV/AIDS (2.9 million), tuberculosis (1.6 million), and malaria (1.1 million).¹³ They represent about a quarter of the 2.3 million deaths due to violence,^{14,15} of which 42% are suicides, 38% are homicides, and 26% are war related.^{16,17}

The limitations of the data concerning the mortality and morbidity of small arms have been noted. In developed countries, different data sources yield different results; for example, Emergency Room (ER) Codes often produce different data than the Uniform Crime Reporting (UCR) Codes. In addition, while homicide is one of the more reliably reported crimes, other crimes (or injuries) involving firearms may not be reported or recorded accurately, even in highly developed countries.¹⁸ Language might play a role in this—the definition of homicide in Spanish includes involuntary manslaughter. Even US and Canadian definitions differ. Hospital records may be unreliable if coding is not a priority. In under-developed countries, reporting of injuries or deaths may be affected by fear of authorities. Cultural factors may come into play; for example, suicides are under-reported when there is a religious taboo against them, whereas “accidents” may be over-reported. Domestic violence in many settings is still not considered a crime and injuries that result from domestic violence may be unreported or reported as self-inflicted wounds or accidents.¹⁹

Reporting of death and injury in conflict zones is even more unreliable. Nevertheless, it is maintained that small arms and light weapons remain the weapons of choice in the vast majority of the world's conflicts.²⁰ International Committee of the Red Cross (ICRC) personnel working in conflict zones claim that these weapons are responsible for more than 60% of all weapons-related deaths and injuries in internal conflicts—far more than landmines, mortars, grenades, artillery, and major weapons systems combined.²¹

The costs of small arms in conflict are reinforced by research undertaken by the World Health Organization (WHO). Because the victims are often the youngest and healthiest of society, it is important to calculate the impact of disability-adjusted life years (DALYs) of the survivors, as well as the impact of the number of deaths. Krug estimates that, whereas war may have ranked 16th in 1990, by 2020 war may be the 8th leading cause of DALYs.²² Many of the deaths caused by small arms are considered to be

preventable, making this *pandemic* a major concern for public health professionals.

Health and Well Being

Death and injury are the most obvious consequences of small arms. Acute injuries may include damage to major organs or vital structures, rupture of major vessels, shattering of bones, trauma to the brain, or severing of the spinal cord. Psychological consequences also take their toll on survivors, the families of victims, whether they survive or not, and on the perpetrators. These include post-traumatic stress disorder, emotional detachment, social withdrawal, suspicion, and recurrent nightmares. In the longer term, there may be rehabilitative issues. What health professionals may fail to appreciate are the many indirect effects.

Social and Environmental Costs

The presence of a large number of weapons in society may foster a climate of fear, whether or not an armed conflict is raging. Increased incidence of crimes involving the use of weapons, such as robberies and assaults, has been shown in societies with a large number of arms.²³ Instability may result in the creation of refugees and internally displaced peoples (IDPs).

Social instability makes protecting the environment essentially impossible and even irrelevant to victim and perpetrator alike. Natural resources are destroyed in armed conflicts exacerbated by small arms. People, forced to flee their homes, eat or burn whatever they can find in order to survive.

Economic Impacts

In many areas of the world, the economic well being of populations is significantly affected by small arms use and possession. The direct effects include the cancellation of direct medical care and rehabilitative services, the disruption of basic human services, the negative impacts on property values and tourism, and the undermining of responsible governance. The indirect effects include economic downturns, lost growth, and reduced productivity. The Inter-American Development Bank estimated the direct and indirect cost of violence for Latin America at \$140–170 billion US per year.¹⁰ In Colombia, violence primarily related to small arms has been calculated as costing up to 25% of the country's gross domestic product (GDP).²⁴

In First World, non-war situations, the impact is also significant. The direct cost of deaths and injuries due to firearms in the US has been calculated at \$14 000 for each fatal gunshot and \$38 000 for each injured person. The total impact goes much further than emergency medical care and rehabilitation, to psychological support for victims and their families, to children growing up without parents, and to those relations and contacts who continue to live in fear. Societal financial costs extend to police services and to lost pro-

ductivity. Ted Miller has estimated costs of firearm-related damage as being \$195 per person per year in Canada and \$495 in the US.²⁵ These figures have been criticized on the grounds that they assign monetary values to substantially unquantifiable factors, such as pain, burden of suffering, loss of livelihood, and quality of life.

Humanitarian Relief Efforts

Gun violence depletes health-care resources, such as blood supplies, in the field and in emergency rooms. Victims may occupy hospital beds or take the time of rehabilitative personnel. When the damage is extensive, it makes careful testing of blood for HIV and other viruses impossible. Armed violence promotes the flow of IDPs and refugees. Within refugee camps, assaults and injuries further strain the resources of humanitarian aid agencies, UN peacekeepers, and the international community, decreasing access to basic services.

International relief operations are disturbed and may be suspended when aid workers themselves become targets of attack or require additional costs for security. More than twice as many ICRC personnel were killed in Chechnya and Rwanda alone in the 1990s than in all other conflicts since the Second World War.⁹

The nightly show of armed conflicts and their consequences on our television screens may lead to a perceived need for a quick remedy in these zones, diverting resources from more enduring treatments of the underlying ills of poverty, deprivation, lack of access to education, and social injustice. During the 1990s, international relief aid for regions in conflict increased from \$1 billion to \$5 billion a year, while at the same time, long-term development aid dropped.⁹

Effects on Women and Children

Men, who are overwhelmingly the perpetrators of violence and the users of small arms, represent the vast majority of direct casualties. In war situations, however, noncombatants may account for more than 35% of casualties. Among these, women and children often are represented disproportionately.^{26,27}

Women's experience of small-arms violence is different than men's. In many parts of the world, women are more at risk from guns in the hands of their intimate partners than they are at risk from strangers or combatants. Women also may be more vulnerable to the secondary effects of small-arms violence, which include psychological, social, and sexual assaults. Studies in post-conflict societies have shown that women's perception of security differs considerably from men's: women more often experience the presence of small arms in the household as threatening, while many men feel more secure in the presence of a weapon.²⁸

Children are made victims when they die, lose a parent, lose limbs, or suffer sexual violence. Yet the incredible firepower of modern weapons also allows children to become combatants and victimizers. In West Africa in particular, demobilization of these child soldiers has become a major issue. Yet even these children, who may have committed terrible atrocities, are victims in another way. They have been robbed of their childhoods, have lost their ties to their family, and often know little else other than war. They may have become addicted to drugs and may have become accustomed to a certain lifestyle that may be difficult to achieve without violence. As United Nations' Deputy Secretary-General Louise Frechette²⁹ has noted:

Small children have big dreams. Small arms cause big tragedies. Clearly, the two do not mix. And yet, from war zones to inner city streets to suburban classrooms, this combustible blend is wreaking havoc and ruining lives.

Regional Perspectives

North America

The US has more than 28000 deaths per year from small arms—accidents, suicides, and homicides—by far the highest rate in the developed world.³⁰ The Centers for Disease Control (CDC) data show that gun-related deaths have now dropped slightly behind motor-vehicle accident (MVA) deaths in the 15–24 age category, after three years in the mid 1990s, when gun deaths actually exceeded MVA deaths. In the US, 38% of firearm deaths are due to homicide; this is similar to patterns found in Third World countries such as Colombia, Brazil, and Jamaica, where firearm homicide rate is comparable to or surpasses the firearm suicide rate. This is the opposite of the pattern in most industrialized countries, where the firearm suicide rate is approximately 5 times the firearm homicide rate.¹⁰

Each year in Canada, approximately 1000 people die as a result of firearms and a comparable number suffer injuries requiring hospitalization.³¹ The bulk of the deaths, over 80%, are suicides. There are about 150–175 firearm homicides each year and less than 50 accidental deaths.³¹ Despite media portrayals of gun violence as an urban phenomenon, the murder rate in communities in Canada with populations greater than 500 000 is half that of rural locations, where there are more guns.³²

Europe

Britain's rates of firearm death are much lower than those in other countries. England and Wales have a firearm suicide rate of

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0.2 per 100 000, a total suicide rate of 7.0, a firearm homicide rate of less than 0.1, and a total homicide rate of 0.6.³³ Rates in other western-European countries are somewhat higher.

Finland has a much higher rate of firearm death, with firearm homicides at 0.4 per 100 000, firearm suicides at 5.2, and total firearm deaths at 5.7. It should be noted that the high firearm suicide rate represents less than 20% of total suicides.³⁴ Alcohol often plays a role.

Estonia, though next door, has a much different pattern of firearm death, perhaps because of the influence of gangs and organized crime. Its firearm suicide rate is 3.7 (one tenth of the total suicide rate), and its firearm homicide rate is 6.3 (about a third of the total violent homicide rate).³⁵

Africa

Shortly before the end of 1989, Charles Taylor invaded Liberia with 100 poorly trained soldiers equipped only with small arms: AK-47 assault rifles, a few machine guns, and some hand grenades. Within a matter of months they had seized several mines, using the profits to purchase additional light weapons. In less than a year, Taylor was able to overthrow the government of President Samuel Doe (himself no paragon of virtue). Less than two years later, rebels, aided by Taylor, repeated the same “success” story next door in Sierra Leone. Weapons originating in Bulgaria and Slovenia, arriving by way of Senegal, from the Ukraine by way of Burkina Faso, and from Liberia, continued to fuel this war. By the time of a ceasefire in July of 1999, the death toll was greater than 50 000 people; another 100 000 were deliberately injured and mutilated.⁹

The triumphant tale of the South-African transition to a multiracial democracy is remarkable in that, in the end, it occurred with relatively little violence. Unfortunately, the toll of overtly “political” conflict is dwarfed by the costs of other forms of violence: 25 000 South Africans were murdered in 1997 alone compared with 15 000 people killed between 1990–1998 in acts deemed “political”. Handguns have been the weapon of choice, rather than military-issue rifles such as the infamous AK-47s. Violence in South Africa remains a major impediment to the provision of basic health-care, diverting resources from other health and social services. It has been identified as a great threat to human rights, economic and social development, and perhaps to democracy itself.³⁶

South and Central America

In Brazil, there are about 45 000–50 000 murders per year, of which 88% are committed with firearms. These have increased about 320% since 1979.³⁶ Firearms account for the majority of deaths in the 15–19 age

category. Interestingly, Brazil reports ten times as many injuries as fatalities from firearms, whereas most industrialized countries, such as Canada and Finland, report approximately equal proportions.¹⁸ This may reflect the fact that in Brazil, in contrast to highly industrialized countries, firearms are more likely targeted at others than at one's self.

In Colombia, there was an increase of 366% from 1983 to 1993. By 1998 there were 18000 firearm murders per year (a rate of about 50 per 100000),³⁷ accounting for 80% of total homicides.³⁶ A large proportion of these remain in the nation's capital, Bogota, as well as in the cities of Cali and Medellin, historic centers of the cocaine trade.

It is calculated that in 1998–1999, the number of violent deaths from small arms in Nicaragua, El Salvador, and Guatemala exceeded those that had occurred in the respective civil wars.⁷ During the civil wars in Nicaragua, Honduras was a transit point for arms, and weapons, including AK-47s, could be purchased cheaply (for less than \$20) and easily along the border. Honduras' murder rate is about 45 per 100000, and a strong majority of these homicides (36 of the 45 per 100000 in 1999) are committed with firearms.³⁸ Guatemala's murder rate is similar and El Salvador's is somewhat higher. Over 75% of El Salvador's murders are committed with firearms, and more than 60% of violent deaths in total are caused by firearms or explosives. Seven percent of 9 to 13 year olds admitted to carrying a gun to school. The vast majority of weapons in the country are pistols and revolvers.³⁹

The Causal Factors

“[T]he root causes of ethnic, religious and sectarian conflicts around the world are quite complex and varied, typically involving historical grievances, economic deprivation, inequitable distribution of resources, human rights abuses, demagogic leadership and an absence of democratic process.”⁹ Socioeconomic factors such as poverty, family disruptions (separation, death, divorce), alcoholism, mental illness, history of violence, and illicit drug use all serve as predictors of individual and group violence, both in first- and third-world settings. Yet research indicates that households and societies with these problems and without guns do not have the same rate of death and injury.⁴⁰

Social conditions have a significant impact on the desire to obtain weapons. Individuals or groups who feel chronically marginalized may be driven by political desperation or domestic despair. Individual criminals and crime organizations may see user-friendly, cheap, and readily accessible weapons as a dramatic and speedy means to gain access to political or economic control.

Child psychiatrist Joanna Santa Barbara's *Cycle of Violence* illustrates how the weaponization of states or communities with pre-existing social conditions undermining stability can ignite, fuel, prolong, or exacerbate armed conflicts.⁴¹ Societal and economic conflicts may spin out of control; political conflicts in individual states may be transformed into armed conflicts that cross borders.

The greater insecurity generated throughout society may in itself lead to a spiraling demand for, and use of, firearms and small arms. States may lose their monopoly on the use of force, leading to progressive privatization of security forces and spreading weapons throughout civilian society. Glorification of weapons on television and in movies may fuel demand further. A population may become acculturated to violence and intractable conflict may develop, sustaining a demand for weapons that may be accelerated simply by their availability.

The development of a culture of firearm violence certainly would hamper efforts towards non-violent conflict resolution, impede peace-building processes, and inhibit the establishment of civil society and stable models of governance.

A number of scholars have maintained that while the proliferation of small arms does not cause violence, it increases the lethality of violence.⁴² Studies undertaken by the ICRC, for example, provide evidence that if small arms remain in circulation after political "conflicts" have ceased, violence among warring factions is replaced by interpersonal violence. Afghanistan in the mid 1990s illustrates the problems faced by armed societies once the fighting has stopped. Meddings compared the circumstances and rates of weapons-related injuries in Kandahar for 5 years before the region came under uncontested control by the Taliban, and the first year-and-a-half in peace after the Taliban's establishment of control (after a six month hiatus allowing for some semblance of stability). Weapons injuries declined only 20–40%, while the rate of gun deaths actually increased. In this "peaceful" post-conflict region, there was a high rate of non-combat injury and 80 deaths per 100000; 50% of these were firearm related. Meddings attributed the failure to reduce injury and death more substantially to two factors: a) after peace was established, there was no disarmament and the weapons remained in circulation, and b) although this one area of the country was at peace, there were armed conflicts between factions in other parts of the country.⁴³

There is similar evidence from developed countries "at peace." The famous *New England Journal of Medicine* comparison of Seattle, WA, and Vancouver, Canada, showed that murder rates vary between cities just a few kilometers apart and in many other ways similar.⁴⁴ In terms of total firearm deaths, Cukier found that the US rate (11.4 per 100000) is about three-and-a-half times that of Canada's rate, roughly correlating to the number of firearms per capita. While the murder rate without guns in the US is roughly equivalent (1.3 times) that of Canada, the US murder rate

with handguns is 15 times the Canadian rate.⁴⁵ Zimring and Hawkins compared transnational patterns of violent crime and concluded that while assault rates in Canada, New Zealand, and Australia are higher than in the US, American rates of *lethal* violence dwarf other industrialized countries.⁴⁶ Similarly, suicides attempted with firearms are more likely to succeed. A study of more than 20 developed countries demonstrated that this direct correlation of the percentage of households with firearms and firearm death rates held true across linguistic, cultural, and geographic boundaries.^{47,48} Miller and Cohen added England and Wales, the US, and Australia to the mix and still found that over 90% of variance in death rate could be explained by access to firearms in those areas. This would suggest that a 1.0% increase or decrease in the number of households with guns in Canada would be associated with a 5.8% increase or decrease in the death rate.⁴⁹

Some have argued that, to the contrary, possession of firearms decreases violence by allowing citizens to protect themselves.^{50,51} For example, widely publicized studies conclude that Americans save thousands of lives each year possessing, using, or threatening the use of firearms. Published estimates of the number of times that a gun is used in the United States for protection in a single year have ranged from 62 000 to 23 million. One study, which asked for details about gun use, estimated that, in 1993, about 400 000 adults felt that they had saved a life by using a gun.⁵² Such studies have been critiqued, however, because of the unreliability of self-reported data, flaws in the research design, and lack of corroborating evidence in, for example, police reports.⁵³

Others have maintained that relaxing controls on firearms improves public safety; for example, the well-known thesis of John Lott states that with more guns there is less crime, and that the right to carry concealed weapons deters criminals.⁵⁰ However, these claims have, on balance, not received support in the medical literature.⁵⁴

In many situations, pre-meditation might be an issue; in others, there is an element of impetuosity. Chapdelaine has noted that gunshot wounds have 5 to 15 times the mortality rate of knife wounds.³² Guns are the most lethal means of attempting suicide, with a 92% mortality rate per attempt, in comparison with hanging at 78% and drug overdosing at 23%.³² Suicide attempts may represent a cry for help or a long-term plan. Impulsivity often plays a role in both violence and suicide, particularly involving youth. Guns often represent a permanent solution to a temporary problem.

A gun in the home is far more likely to be involved a fatal or non-fatal accidental shooting, criminal assault, or suicide attempt than to be used to kill or injure in self-defense. Controlling for such confounding factors as sex, race, and age, households with firearms have three times the number of homicides⁵⁵ and five times the number of suicides⁵⁶ (due to all causes) compared to similar households in the same neighborhoods. Mental illness, illicit drug use, alcohol, and domestic violence also are predictors of death.

Recent purchasers of handguns may be the most at risk.⁵⁷ Similarly, risk-assessment instruments for domestic violence in the United States have indicated that firearm ownership is one of the strongest predictive factors of intimate partner femicide.⁵⁸

The Proliferation of Legal and Illegal Small Arms

The value of legal trade in small arms accounts for perhaps \$7.4 billion US, a relatively small proportion of the roughly \$850 billion spent on military forces annually worldwide.⁷ The major arms producers and exporters in the world include the US, China, Russia, and many western and eastern European nations. These countries are economically and politically influential and include all five permanent Security Council members, who have veto power at the UN over any significant action. They view guns as legitimate items of commerce and thus might be reluctant to embrace any measures that would restrict their trade. According to information provided by 77 countries to the UN *International Study on Firearms Regulation*, 45 countries acknowledged that firearms, components, or ammunition were produced legally on their territories.⁵⁹ In 1999, the UN Group of Governmental Experts estimated that arms were produced by at least 385 companies in 64 countries.^{10,60} The Small Arms Survey⁷ has calculated more recently that 98 countries produce or have the capacity to produce weapons, and over 1000 companies are involved. Perhaps the most successful weapon on record is the Kalashnikov or AK-47: designed in 1941, mass produced in 1947, now has licensed production in more than 19 countries, and numbers worldwide are estimated at between 70–100 million.¹⁰

While most of these weapons end up in the hands of state forces, a significant number are found in the hands of irregular armies, communal factions, crime and drug syndicates, and individuals.

Despite its opposition to regulation on an international level, the US, remarkably, has some of the strictest controls on exports and documentation of transfers. Yet figures for small-arms transfers vary. The 2001 Small Arms Survey placed the value of the small-arms and ammunition trade in the US as being worth about \$1 billion of that country's total \$20 billion in arms exports.¹⁰ The US exports \$367 million of firearms annually through customs (whereas the UK exports about \$57 million).¹⁰ Total sales or transfers of small arms and ammunition in 1998 were considered to be worth \$463 million; these were to 124 different countries.⁹ Of these 124 countries, about 30 were at war or experiencing persistent civil violence in 1998; in at least five, US or UN soldiers on peacekeeping duty have been fired on or threatened with US-supplied weapons.⁹ This particularly ironic situation has been termed the "boomerang" effect. Yet the general perception within the US remains that the arms industry makes a positive contribution to employment and the economy because of these exports. Recent public awareness

of the weapons the US supplied to Osama Bin Laden and Saddam Hussein in the late 1980s and early 1990s may finally change this perception.

Canada is the world's 9th largest arms exporter. Small-arms exports permits increased in value from \$1.5 million (Canadian) in 1990 to 29.3 million by 1996. In the same year, the number of countries authorized to receive weapons increased from 18 to 50.⁶¹ During the 1990s, Canada exported military items to at least 17 countries engaged in armed conflict and many more regimes with undemocratic rule or human-rights abuses.⁶² Six percent of Canada's 292 million arms exports are small arms and ammunition.⁶³

Virtually all illegal small arms begin as legal small arms, whether in the hands of insurgents or criminals. While arms are supplied through a complex global system, their transfer may be summarized as being channeled through the licit, illicit, and "gray" markets. Legally manufactured and traded weapons may be misused by their owners or others, including the State, in human-rights violations. They also represent the vast majority of gun suicides.

The so-called "gray" area weapons transfers are those that involve legal weapons that are stolen by, given to, or sold to criminals or allied paramilitary forces (the state, police or military could be the donor party). Such transfers often exploit loopholes to circumvent national policies or laws and involve the most significant proportion of criminal misuse.

The experience of police forces throughout the world shows that the illegally manufactured and traded weapons represent only a small minority of those used in the commission of suicides or homicides.

Lines between civilian and military markets, and between domestic and international markets, often are unclear. Lora Lumpe tracks the flow of these weapons in *Running Guns*, showing how weapons may be misappropriated on a massive scale from First World producers through a shadowy network of straw purchases to conflict zones. The different supply networks interact, sharing personnel, transportation, and banking infrastructure.⁶⁴ When one network is constrained, for example, by political forces, another network may assume some of the distribution function. If an arms embargo is imposed on a country, the illicit trade may increase as governments and non-state actors resort to covert transfers. An individual state's attempts to constrain legal access to firearms may be undercut by weaker controls in neighboring countries. Since the end of the Cold War, the role played by private interests has increased. However, regulatory efforts are not futile because the growth in illegal markets seldom offsets the decline in legal markets.

The US, with few domestic constraints, is often the source of weapons in other countries. In 1994, for example, foreign governments reported 6238 unlawfully acquired firearms that had originated in the US to the US Bureau of Alcohol, Tobacco and Firearms. Over 3000 of these were found in Mexico. Most (60–70%) of the handguns used in crime in Canadian cities

are imported illegally, mainly from the US. Many of these go from Canada to the US and back again. In Japan, most (60%) of the firearms recovered by police are smuggled in from the US (30%) and China (30%).⁶⁵

The Right to Bear Arms?⁶⁶

Rights arguments have been prominent in the ongoing debate over firearms controls. However, rather than any notion of a collective right to safety, the rights that tend to be emphasized are the purported rights of individual citizens to keep and bear arms free from state intervention. The principal source of this argument is, of course, the powerful gun lobby in the United States. On a recent visit to Canada, the president of the National Rifle Association, actor Charlton Heston, referred to the right to bear arms as “God-given,” telling a group of supporters that “You may not be absolutely free by owning a firearm. . . . but I guarantee that you will never be free when you can’t.”⁶⁷ This conception of rights and freedom generally is propounded by those opposing restrictions on firearm ownership and use. However, there is no right to bear arms under any instrument guaranteeing international human rights. The United States appears to be the only national jurisdiction in which such a right may have any semblance of a legal or constitutional basis. Even in that country, the existence of such a right is contested. Even a literal reading of the Second Amendment to the US Constitution reveals that the provision relates to the possession of arms by organized protectors of the people, not individuals: 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.⁶⁸ In addition to this, US courts have repeatedly and unanimously held that the United States Constitution does not guarantee individuals the right to possess or carry guns; the Second Amendment only protects the right of the state to maintain *organized* military forces.⁶⁹ It does not impede local, state, or national legislatures from enacting or enforcing gun-control laws.⁷⁰ While controversy may remain over the interpretation of the American Second Amendment, the notion that a right to bear arms exists has been dismissed in other countries. The issue of gun control was comprehensively revisited in the United Kingdom in the public inquiry following the Dunblane massacre. In the inquiry report, Lord Cullen declared, “The right to bear arms is not a live issue in the United Kingdom.”⁷¹ The New Zealand High Court has stated, “It should be emphasized, that there is no general right to bear arms in this country such as is safeguarded—if that is the appropriate term for it—under the United States Constitution.”⁷² In Canada, in a case dealing with legislative controls on automatic weapons, the Supreme Court has stated that Canadians “do not have a constitutional right to bear arms. Indeed,

most Canadians prefer the peace of mind and sense of security derived from the knowledge that the possession of automatic weapons is prohibited.”⁷³

International Law

Even in the absence of formal treaties, international law regulates the flow of arms. The UN Charter and customary international law prohibit the use of force and interference in the domestic affairs of another country. It forbids states and non-state actors from assisting in terrorism, human-rights violations, and genocides with arms transfers. It also prevents states from assisting other states in illegal action even if the assistance itself is legal. Human-rights law to protect the physical integrity and dignity of the governed from states is guaranteed by the 1948 Universal Declaration of Human Rights.

Security Council Resolutions also have the force of law and are binding on all UN states. The Council may decide to enforce regional embargoes, such as the one on the former Yugoslavia, as it seemed to do on an increasing basis in the last decade. Embargoes are designed to reduce tensions. One drawback cited is that the weak and dispossessed may not be allowed the means to combat rights abuses with a more powerful opponent with greater resources at its disposal.

International humanitarian law is meant to protect non-combatants and may be applied to restrict weapons that cause damage disproportionate to the war aims. This was seen most spectacularly with the landmines signing treaty. Whole classes of weapons such as assault weapons and weapons of war (grenades, rocket launchers, etc.) could be banned from civilian possession, just as landmines and other indiscriminately harmful weapons have been banned from military and civilian use.

Article 36 of the 1977 Additional Protocol I of The Geneva Convention bans proposed weapons, which, by its design, causes effects on health that may constitute “superfluous injury or unnecessary suffering.” The SirUS (Superficial Injury and Unnecessary Suffering) project, sponsored by the Red Cross and supported by numerous medical and humanitarian organizations, is a major appeal to practical recognition of these principles.

Other UN Resolutions

Effective national regulation on the possession of small arms has been affirmed by the United Nations, including the UN Security Council Resolution 1209 (1998) and the Report of the Disarmament Commission adopted at the General Assembly (1999).³⁶

Continued

*Universal Declaration of Human Rights*⁶⁶

All human beings have the right to life, liberty, and security of the person under Article 3 of the *Universal Declaration of Human Rights*. Furthermore, the preamble of the *Universal Declaration* states that freedom from fear is one of the highest aspirations of the common person. Freedom from physical or psychological violence is a prerequisite to the enjoyment of fundamental human rights. War is said to be, by definition, a means of violating human rights.⁷⁴ Peace itself has been identified as a human right, with the United Nations Charter providing the foundation for this right.⁷⁵

Interventions

The best preventative strategies, whether aimed at cancer or violence, strike at the roots of the disease. Consequently, the importance of long-term primary prevention strategies that address the root causes of violence at the community and individual levels are critical. Demand-reduction approaches include a broad array of development and democracy-building measures, as well as measures aimed at reducing the “culture of violence.”

As noted above, the extensive work that establishes the strong link between mortality and morbidity and the proliferation of small arms provides general support for measures aimed at improving controls over legal small arms in order to reduce the risk of misuse and diversion.

There are a number of international resolutions and agreements that are aimed at reducing the illicit trade in small arms. These include:

- The United Nations Convention on Transnational Organized Crime (UN A/REC/55/25, 2000) which establishes standards for import, export, transfer, marking, and tracing of firearms (excluding state to state transfers).
- The Protocol against the Illegal Manufacturing of and Trafficking in Firearms, Their Parts, Components, and Ammunition (A/RES/55/255, 2000), part of the UN Convention on Transnational Organized Crime, which regulates commercial shipments of firearms. It is legally binding and requires both export and import licenses, marking and tracing standards, and provisions for confiscation, seizure, and deactivation.
- A Program of Action (PoA) established by the UN 2001 Conference on the Illicit Trade in Small Arms in All Its Aspects which provides a framework for focusing on stemming the flow of illegal weapons to conflict zones.

The PoA stops short of measures supported by many nongovernmental organizations (NGOs),^{76,77} which have maintained that much more needs to be done to prevent the proliferation and misuse of small arms. In addition to encouraging states to ratify existing international agreements, a number

of other measures are being promoted. Given the nature of the illicit trade and the misuse of these weapons, the proposed measures are similar, regardless of whether the concern is conflict, crime, injury, or terrorism. These measures include:

- Strengthening export and import license authorizations; for example, ensuring that there are reciprocal measures so that both the importing and exporting country must approve transactions;
- concluding a legally binding global agreement on the marking and tracing of weapons to include systems for adequate and reliable marking of arms at manufacture and/or import;
- adequate record keeping on arms production, possession, and transfer;
- agreeing on international definitions of arms brokers and shipping agents and developing legally binding controls on their activities;
- establishing, on an international basis, a set of standards and measures to strengthen controls governing the legal transfer of weapons to both state and non-state actors in order to prevent the transfer of weapons that might be used for repression or aggression, or contribute to the escalation of conflicts or regional destabilization.

Despite continued opposition within the US,⁷⁹ it is clear that strong domestic regulation of civilian possession and use is critical.⁷⁷ Measures that allow legitimate civilian uses of small arms, but reduce the risk that small arms will be misused or diverted from legal to illegal markets, include licensing, regulation, standards for safe storage and, for example, the ban on civilian possession of fully automatic military assault weapons, which usually would not be needed for legitimate sporting activities.⁶⁶ The purposes for which guns may be acquired vary, and the standards for screening applicants differ, but clearly norms are emerging worldwide.⁸⁰ The efforts of the international community to establish norms for domestic regulation have been blocked consistently by the United States, owing largely to the influence of the National Rifle Association. The draft Program of Action for the UN 2001 Conference on the Illicit Trade in Small Arms in All Its Aspects contained measures to encourage states to ensure adequate regulation of the civilian use and possession of small arms; it also suggested a prohibition on the civilian possession of military assault weapons. However, the United States forced removal of any reference to the responsibility of states to adequately regulate civilian possession of firearms from the final Program of Action.⁸¹

In addition to the international agreements, which are notoriously difficult to develop and even more difficult to implement, there has been considerable activity at the regional level to address the problem of small arms.

Efforts are underway to develop multilateral agreements to curb the trade in small arms to human-rights abusers. Nongovernmental organizations have attempted to incorporate the best of existing treaties with international law. In 1997, a group of 18 Nobel Peace Laureates, including both

TABLE 1-1. Regional approaches

 European Union Program for Combating and Preventing Illicit Trafficking in Conventional Arms⁸²

In 1993, the Organization for Security and Cooperation in Europe developed criteria for arms transfers, including small arms.⁸³ These criteria consider a recipient state's human rights record, record of compliance with international commitments and the cost of the arms in question in proportion to the economic circumstances of the recipient state. The European Union later expanded on this with a Code of Conduct, which entered into force in 1997. To the criteria above, it adds the requirement of respect of international sanctions and further consideration of the internal situation of a country, the country's efforts to preserve regional peace and security, stability, international security, the recipient country's attitude towards terrorism and the risk of diversion or re-export. Individual European countries may have additional national restrictions on transfers. Though comprehensive, the Code of Conduct's one major drawback is its non-binding nature.

 OAS: Inter-American Convention Against the Illicit Manufacturing and Trafficking in Firearms, Ammunition, Explosives, and Other Related Materials⁸⁴

The Organization of American States (OAS), recognizing the close link between illicit arms sales, drug trafficking, and violent crime, adopted a convention that requires member states to criminalize the unauthorized production and transfer of firearms, ammunition, and related materials, and to cooperate with one another in suppressing the black-market trade. This requires that countries develop and implement domestic laws and regulations setting out procedures for the legal manufacture, importation, and exportation of these materials. This agreement is binding on individual countries. However, only half of the countries have ratified the treaty; Canada and the US have yet to do so.

 ECOWAS: Moratorium on the Import, Export, and Manufacture of Small Arms⁸⁵

Even in war zones, individual countries or communities of nations can help curb the trade. West Africa, the locale of several of the most horrific conflicts of the 1990s, adopted a renewable, three-year voluntary moratorium on the import, export, and manufacture of small arms and light weapons in 1998. Major credit must be given to the president of Mali, Alpha Oumar Konaré, who spearheaded this effort in the Economic Community of West-African States (ECOWAS). States are allowed to apply for exemptions because of re-training or replacement of outdated weapons from the international regulatory body. This agreement represents the first time that a block of states that import large numbers of light weapons has adopted a measure of this kind, and it stands as an important model that other regions can emulate. The moratorium has been largely observed by member states.

Other regional agreements have been developed in the Great Lakes Region and the Horn of Africa, in Latin America, in the South Africa Development Community (SADC), and the Organization of African Unity.

individuals and organizations, began a campaign for a more responsible arms trade. It incorporates the best of the comprehensive European approach and of the binding OAS approach. Like-minded countries and NGOs are in the process of developing a new Framework Convention based on these principles.⁸⁶

Attention also has been focused on measures to collect and destroy surplus weapons. International standards have been proposed for the destruction of confiscated or surplus small arms and light weapons.

Weapons-collection programs in post-conflict areas are critical to the establishment of lasting peace—otherwise the risk of high levels of violence remains.²¹ The value of weapons-collection programs in other contexts varies from region to region. In some cases, particularly where they are mandatory and accompanied by incentives and/or criminal sanctions—for example, in Australia or Great Britain—these programs have resulted in large numbers of weapons being collected and destroyed. In other settings, their impact appears to be largely educational and associated with efforts to build a culture of peace. In Canada, a volunteer amnesty in 1991 netted 50 000 firearms; this has been criticized as of little utility because many of them were just old hunting rifles.⁸⁰ In the US, collection programs have been initiated in many inner cities, and in Brazil, on 24 June 2001, just prior to the UN Conference on Illicit Small Arms, more than 100 000 weapons were collected and destroyed. In post-conflict areas, NGOs often are helpful with collection and destruction programs to disarm paramilitaries.

Improvements to record keeping, tracing, information exchange, and enforcement also have been emphasized by the international community. There has been renewed emphasis on local measures; for example, more strictly controlling access to small arms in public places. Some countries, such as South Africa, have legislated “gun-free zones” to reduce risk.

There also have been efforts directed at manufacturing “smart guns,” which can only be activated with codes or biometric information, and at developing technologies to reduce the impact of bullets (kevlar vests are a notable example).

From a public health perspective, injury prevention also must be supported by injury control. Timely and appropriate treatment of injuries due to small arms can significantly reduce mortality. Consequently, improved emergency services, training, etc., are critical parts of any strategy.

Evaluation

One of the most important steps in implementing an injury-prevention strategy is evaluation. Given the complex interaction of factors thought to produce or exacerbate violence, evaluation of particular interventions is notoriously difficult.^{5,87,88} With the differences in the causes of firearms injury among specific populations, and given the multiple factors involved much of the research, particularly in the US, has focused on the impact on certain populations of particular interventions—for example, legislation concerning safe storage. Extensive research also has been conducted on the factors influencing crime rates; for example, social and economic inequality, culture and values, the political environment, substance abuse, and other high-risk behaviors have been identified as important factors.⁴⁷ The interactions between these variables are complex, and they are not all easy to measure or control for in longitudinal studies. While the diminish-

ing proportion of males between the ages of 15 and 24 has been identified by some researchers as a key factor in the decline in crime rates in many countries,⁸⁹ a number of studies have pointed to stronger legislation as at least partly responsible for reductions in firearm-related deaths. For example, in Canada, firearm deaths and injuries have declined significantly with stronger legislation, and, more significantly, the rates of firearm homicide with rifles and shotguns—the focus of the legislation—have declined by more than 60% over a 10-year period, while murders with handguns (often illegally imported from the US) remained relatively flat.⁹⁰ Australia also has reported significant decreases in fire-arm violence following a nationwide agreement on firearms.⁹¹ Even in Colombia, a ban on carrying handguns in Bogota and Cali on certain days, coupled with strict enforcement, has been linked to a significant decline in homicides.⁹²

The impact of legislative changes seems clearest in industrialized countries with high incomes, stable political environments, and effective policing and judicial systems.¹² While there is limited research suggesting that interventions focused on controlling access to firearms may have an impact in other countries, such as Colombia,⁹² it is clear that a wide range of variables shape demand for and use of firearms in the South, including criminal activity, drug use, parental factors, and religious beliefs.⁹³ It has been observed that some developing and newly democratic nations with relatively strict laws on the books—such as Brazil,⁹⁴ Estonia,⁹⁵ Jamaica,⁹⁹ and South Africa⁹⁶—have large numbers of illicit firearms in circulation and high rates of lethal violence. More study is needed, but this appears to be the result of strong social, economic, and political conditions fuelling demand, coupled with a lack of effective enforcement capacity and well-established sources of illicit weapons.

It also is interesting to note that the politically charged nature of the question of firearms regulation—especially in the US—appears to have placed a burden of proof on researchers that is much higher than that normally required to support other public health or safety interventions.⁹⁷ Yet criminologist Neil Boyd,⁹⁰ in a study of Canadian law, has concluded that there is more evidence to support the efficacy of gun-control legislation in reducing death and injury than for most other legislative interventions.

The results of amnesties, buybacks, and weapons-collection programs are variable. In some cases there is limited evidence of significant short-term impact on weapons availability, although there appears to be an important educative function involved. In response to massacres at Dunblane and Port Arthur, the United Kingdom and Australia both tightened regulations; the former banned handguns, and the latter, semi-automatic rifles. British citizens voluntarily turned in 200–250 000 weapons, while the Australian buyout program netted 750 000.⁹⁸ The empirical evidence from Australia suggests that, in the short term at least, firearm homicides have declined. In Great Britain, the evidence is less clear. It seems that an increase in illegal

gun trafficking may have offset some of the gains. However, female firearm homicides have declined dramatically.⁷

Conclusions

Mainstream health-care organizations throughout the world—including the US—universally support measures to strengthen controls over firearms and to treat the global problem of small arms. The American Academy of Pediatrics, the American College of Physicians, the American Society of Internal Medicine, the American Academy of Child and Adolescent Psychiatry, and the American Medical Association are members of the Handgun Epidemic Lowering Plan (HELP) Network.⁹⁹ The Canadian Public Health Association, the Canadian Association of Emergency Physicians, the Canadian Paediatric Society, the Trauma Association of Canada, and the National Emergency Nurses Affiliation also support stricter laws.¹⁰⁰ Many law-enforcement officials outside of the US believe that licensing firearm owners and registering firearms are essential to prevent the diversion of legal guns to illegal markets. In Canada, the Canadian Association of Chiefs of Police and the Canadian Police Association have been strong supporters of gun-owner registration.¹⁰¹ In Britain and Western Europe, the societal consensus for controls on private firearms is even stronger. Similar coalitions have emerged in the South as well, as evidenced by the diverse range of regional initiatives that have emerged.

While it is true that more research is needed on the impact of small arms, particularly in some regions, and on the effectiveness of particular interventions, it is critically important that health-care professionals avoid the “paralysis of analysis.” As Austin Bradford Hill remarked in 1965 on the need to control tobacco products, “All scientific work is incomplete . . . All scientific work is liable to be upset or modified by advancing knowledge. That does not confer upon us the freedom to ignore the knowledge we already have or to postpone the action that it appears to demand at any given time.”¹⁰²

Resources

Web sites

IANSA: <http://www.iansa.org/>

Small Arms Survey: <http://www.smallarmssurvey.org/>

SAFER-Net: <http://www.ryerson.ca/SAFER-Net/>

HELP: <http://www.helpnetwork.org/>

WHO Injury and Violence Prevention: http://www5.who.int/violence_injury_prevention

Johns Hopkins: <http://www.jhsph.edu/gunpolicy/>
 Physicians for Social Responsibility: <http://www.psr.org/violence.html>
 IPPNW: <http://www.ippnw.org>
 Arias Foundation: <http://armslaw.org/fccomment.html>
 Coalition for Gun Control (Canada): <http://www.guncontrol.ca/>
 Gun Control Network (UK): <http://www.gun-control-network.org/>
 Gun Control Alliance (South Africa): <http://www.gca.org.za/>
 Guncite (US): <http://www.guncite.com/>

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Country Comparison <http://www.ippnw.org/MGS/V7N1Cukier.html>

Canada/US Comparison

Firearms Death (Rate per 100000)*		Canada	US	US/Canada
Accidental deaths with Firearms	1999	0.1	0.3	2.6x
Suicides with Firearms	1999	2.6	7.1	2.7x
Total Firearms Deaths	1999	3.3	10.7	3.2x
Crime Statistics (Rate per 100000)		Canada	US	US/Can
Murders with Firearms	2001	0.55	3.6	6.5x
Murders with Handguns	2001	0.35	2.8	8.0x
Murders without Guns	2001	1.23	2.0	1.6x
Robberies with Guns	2001	14	62	4.4x
Robberies without Guns	2001	74	87	1.2x

Fewer firearms are being used in crimes in Canada—for example, the rate of firearm robberies has declined significantly by over 50% since 1991, including a 12% decline in 2001, the lowest rate since 1974. The Government of Canada firmly believes that the Firearms Program is making an essential contribution to our efforts to sustain this reduction.

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