American Pediatric Surgical Association

Firearm Injuries and Children

May 4, 2013 – Approved by the APSA Board of Governors and Membership

"We can wait no longer to act"[1]
--C. Everett Koop, 1992

The seemingly endless firearms-related mass casualty incidents such as occurred at Columbine and Virginia Tech and Tucson and Aurora serve as vivid, continuing reminders of our gun violence epidemic. But the shooting at Sandy Hook Elementary School, claiming 26 innocent lives, among them 20 first graders, was singularly disconcerting. Gun violence occurs every day, respecting no age, no gender, no ethnicity. Firearms claim the lives of more the 30,000 Americans annually including 10,000 homicides and 20,000 more who die of self-inflicted gunshots.[2] Additionally, another 75,000 are injured each year by guns but survive, their lives forever changed.[2] Every day surgeons in our trauma centers witness the deaths of children from firearm injuries. In 2010, there were 2,711 children (age 0-19 years) who died by gunshot with another 15,576 injured. Firearms are associated with one of the highest case fatality rates (20%) of all injury mechanisms, even higher (26%) in the youngest children (0-10 years).[2] Firearms are the second leading cause (behind motor vehicles) of trauma death in the pediatric population in our Trauma Centers.[3] [Figure 1] To rein in this complex problem, change is necessary. Since the last version of the American Pediatric Surgery Association's (APSA) position statement in 1999, there have been 36 mass shootings resulting in 317 deaths and 267 injuries.[4] In addition, since 1999, more than 35,000 children (age 0-19 years) have died as a result of a firearm injury.[2] Outlined below are changes supported by APSA.

In firearm ownership, the United States has no peers among the highest-income countries.[4, 5] Firearm-related injury and death are also distinctly more common in America.[7,8][Figure 2] The risk of firearm homicide, suicide and unintentional injuries is more than 5-fold greater in the United States than 23 other high-income countries considered collectively.[8] Firearm-related injury and death are issues for all Americans, in all communities. The risk of dying by firearm is the same for residents of the largest cities as it is for the residents of the smallest counties and holds true for adult and pediatric patients alike.[9, 10][Figure 3] This parity in risk is due to the predominance of firearm suicides and unintentional firearms deaths in the rural counties and the predominance of firearm homicides in the urban counties. All Americans should share concern about firearms-related mortality. Because of the regularity, complexity and geographic variability of the problem, it is best addressed as a public health issue. **APSA**

Positions supported by APSA

- APSA supports addressing firearm-related injury and death as a public health problem with the necessary attendant resources to succeed
- APSA supports efforts to improve the availability and quality of mental health services for both children and adults
- APSA supports a system of universal background checks for all firearms transactions including private sales
- APSA recommends removal of language limiting the funding of firearms-related research necessary to address this public health problem as well as support to extend the NVDRS to all states and territories
- APSA supports limitations on access to high capacity magazines and assault-style weaponry
- APSA supports all efforts to limit access by children to firearms including the use of gunlocks and safe storage techniques
- APSA supports legislative efforts, such as CAP laws, to limit the access to firearms by children
- APSA recommends removal or clarification of language in the Affordable Care Act limiting discussion regarding the presence of firearms in homes with children. APSA opposes, in the strongest possible terms, state level legislation infringing upon the physician patient relationship
- In the absence of data supporting the salutary benefits of armed personnel in schools, APSA does NOT support a standard practice of arming teachers, parents or other officials in the school setting

supports addressing firearm-related injury and death as a public health issue with allocation of the necessary attendant resources to mitigate the problem.

Suicide ranks as the 10th most common cause of death in America (all ages) but is the 3rd leading cause of death in our youth and young adults (ages 10-24).[11] While precise data regarding attempted suicides are not available, it is estimated that there are 25 suicide attempts for every completed suicide.[12] Firearms were utilized in 49% of completed suicides making them by far the leading method of completed suicide in children ages 10-19 years.[13] Most adolescent suicides occur in the home with a firearm owned by the parent.[14] In youth suicides, the use of a firearm resulted in a fatality in 95.3% of attempts.[15] And while it is true that a troubled youth may simply choose another method to attempt suicide if a firearm is not accessible, none will be as lethal. In many cases, firearm suicide is accompanied by the murder of others. At times this may be a family member, such as might occur in a domestic dispute; at times it involves the death of many such as occurred at Columbine. It is estimated that between 1,000 and 1,500 deaths each year (1992 estimates) occur as a result of murder-suicide.[16] In 95% of cases, a firearm was used for both the murder(s) and suicide.[17] Addressing mental health services to reduce the firearm suicide rate (and unintended homicide rate) is crucial. **APSA supports efforts to improve the availability and quality of mental health services for both children and adults.**

As a result of the Brady Handgun Violence Prevention Act of 1993, the National Instant Criminal Background Check System (NICS) was created.[18] The NCIS was employed to perform background checks of individuals purchasing firearms from licensed dealers in the U.S. However, this system did not address firearms sales by unlicensed dealers, creating a serious loophole that still excludes an estimated 40% of gun transactions in the United States.[19] This loophole includes private firearms sales and sales that occur at gun shows. Further compromising the integrity of the system of background checks are individual state variances. A total of 19 states allow licensed dealers to waive the background check and 4 states do not consider mental illness as a reason to deny a firearm purchase.[20] In addition, the criteria for mental health reporting to the national system by the states is inconsistent. Despite the shortcomings in the system, since its inception, the NICS has resulted in the denial of sale of nearly 1 million firearms.[21] But, with loopholes that circumvent the system, reforms are necessary to eliminate transactions without appropriate background checks. **APSA supports a system of universal background checks for all firearms transactions including private sales.**

As physicians and surgeons, we are expected to practice medicine based on the best data available for a given condition. We rely on data and experience to make decisions that impact lives every day. Data is no less important when trying to understand a problem as complex as firearm injury. Yet in 1996, Congress passed legislation limiting the Centers for Disease Control from funding firearms-related research.[22] Later, that moratorium was extended to all Department of Health and Human Services agencies, including the National Institute of Health. These actions effectively shut off public funds to nearly all firearms research. Currently, cancer research receives approximately $4 billion in federal funds annually for research or about $4,200 per year of potential life lost.[23] Firearms injury research, in comparison, receives just $2 million per year or just $2.70 per year of potential life lost, less than the cost of a latte. Without research, claims regarding the efficacy of existing, former or proposed legislation are based on anecdote or conjecture. This data is desperately needed. A promising research tool to help understand the circumstances of violent death is the National Violent Death Reporting System, initially funded by Congress in 2002.[24] This system, modeled after the highly successful Fatal Accident Reporting System for motor vehicle crashes, has been functional in just 18 states. Lack of funding has limited its full implementation which has in turn limited our understanding of gun violence and its causes. Correct categorization of firearm deaths (determining unintentional from potentially self-inflicted or vice-versa) is not always possible and frequently inaccurate. The NVDRS data collection methodology is far more robust than other existing repositories and can help clarify many of these potentially misclassified firearm deaths.[25] In 2004, a blue-ribbon panel was convened by the National Academy of Science to study the state of firearms research.[26] The authors noted that "Adequate data and research are essential to judge both the effects of firearms on violence and the effects of different violence control policies." And "…many of the shortcomings described in this report stem from the lack of reliable data itself rather than the weakness of methods." The panel concluded, "…if policy makers are to have a solid empirical and research base for decisions about firearms and violence, the federal government needs to support a systematic program of data collection and research that specifically addresses that issue." The panel also renewed their support for the "development and maintenance of NVDRS." **APSA recommends removal of language limiting the funding of firearms-related research necessary to address this public health problem as well as support to extend the NVDRS to all states and territories.**

On October 2, 2006, Charles Roberts barricaded himself and 10 girls, ages 6-13, into a one-room schoolhouse in Nickel Mines, Pennsylvania, the heart of Amish country. Before the ordeal ended, he would shoot all 10 girls "execution style" and then himself. Eight girls survived long enough to receive medical treatment, five girls survived to discharge from the hospital. On December 14, 2012, Adam Lanza forcibly entered Sandy Hook Elementary and murdered 26 people including 20 children. Not one child survived to receive medical treatment. One difference between the two incidents; Charles Roberts in Nickel Mines used a 9mm handgun; Adam Lanza chose an assault-style rifle at Sandy Hook. In a review of mass shootings in the U.S., Follman and colleagues analyzed data on the 62 mass shootings (4 or more homicides) that occurred over a 30-year period.[5] Based on these data, it was noted that the weapons recovered from the assailants in these 62 shootings included 68 semi-automatic handguns and

35 assault weapons.[27] In 2012, there were a record 7 mass shooting incidents in the U.S. injuring or killing 151 people. While assault-style rifles are responsible for a minority of overall gun deaths in the US, they have become a weapon of choice for the assailant whose intent is chaos and casualties. The high muzzle energy, large capacity magazines and ability to fire rapidly make these weapons particularly devastating. Their place in a civilian arsenal must be questioned. While the Supreme Court firmly upheld the second amendment's guarantee of the right to bear arms, it did so with certain stipulations.[28] Justice Scalia, in his majority opinion noted that, "like most rights, the Second Amendment right is not unlimited. It is not a right to keep and carry any weapon whatsoever in any manner whatsoever and for whatever purpose." **APSA supports limitations on access to high capacity magazines and assault-style weaponry.**

Children die by gunfire. These deaths occur unintentionally as well as intentionally (homicide or suicide). The presence of a firearm in the home has been shown to increase the risk of injury and death.[29] For every self-protection homicide, there were 1.3 unintentional firearm deaths, 4.6 criminal homicides and 37 gun suicides. Researchers noted a "positive and statistically significant association between gun availability and state level rates of unintentional firearm deaths, homicides, firearm homicides, suicides, and firearm suicides among children (ages 5-14 years)]."[30] That is, in states with increased gun availability, death rates from firearms (all categories) for children were higher. Conversely, for each 10% decline in the percentage of households with both firearms and children, firearm suicide among children 0–19 years of age dropped 8.3%.[31] For households with firearms and children, safe storage practices reduce the risk of unintentional firearm deaths and suicides in children.[32] Each of the four practices of keeping a gun locked, storing a gun unloaded, keeping ammunition locked, storing ammunition and gun separately were associated with incremental decreases in injury rates. Other safety devices such as load indicators, magazine safeties and personalized devices have shown promise as well.[32] Limiting access to firearms by children limits the risk of injury and death. **APSA supports all efforts to limit access by children to firearms including the use of gunlocks and safe storage techniques.**

Child access prevention (CAP) laws have been enacted in many states to help limit the exposure of children to firearms. In general, these laws are designed to hold the parent responsible for the consequences of a child accessing and using a firearm. The intent is to encourage parents to store weapons appropriately and prevent unintended access by children. Studies have demonstrated that in states with CAP laws the rate of unintentional firearm deaths are lower than in states with no CAP laws. More importantly, unintentional firearm death rates decreased significantly in those states enacting CAP laws (when comparing a 5-yr pre-CAP rate to a 5-yr post-CAP rate).[34] Other researchers have demonstrated a more modest (but not statistically significant) post-CAP decline in unintentional firearms deaths of children.[34] Further research is warranted to clearly establish the efficacy of these laws. **APSA supports legislative efforts, such as CAP laws, to limit the access to firearms by children.**

Counseling patients and their families about the potential risks of firearm ownership (as outlined above) is important. Just as it is important to know if a there is a firearm present in the home of a patient assessed to be clinically depressed, or in a home with reported domestic violence, so too is it important for parents to know the risk of keeping a firearm in the presence of a child. A full understanding of the potential risk of a firearm in the home and understanding ways to mitigate that risk should be proactively discussed by doctors with their patients. However, such previously inviolate physician-patient discussions have been imperiled by federal and state legislation. Language incorporated in the Patient Protections and Affordable Care Act limits conversations between physicians and their patients.

> *(c) PROTECTION OF SECOND AMENDMENT GUN RIGHTS.−*
>
> *(1) WELLNESS AND PREVENTION PROGRAMS.−*
>
> *A wellness and health promotion activity implemented under subsection (a)(1)(D) may not require the disclosure or collection of any information relating to−*
>
> *(A) the presence or storage of a lawfully possessed firearm or ammunition in the residence or on the property of an individual; or*
>
> *(B) the lawful use, possession, or storage of a firearm or ammunition by an individual.*[36]

Several states have enacted (or are considering) legislation banning discussion between a physician and his or her patients regarding the presence of firearms in the home. In Florida, in 2011, the legislature passed and the governor signed a bill stating that:

> *A health care provider or health care facility shall respect a patient's right to privacy and should refrain from making a written inquiry or asking questions concerning the ownership of a firearm or ammunition by the patient or by a family member of the patient, or the presence of a firearm in a private home or other domicile of the patient or a family member of the patient.*[37]

The penalty for violation of this law could include loss of license to practice medicine and a fine of up to $10,000. The language of this bill was subsequently struck down as unconstitutional. The relationship between physician and patient (family) should not be limited. **APSA recommends removal or clarification of language in the Affordable Care Act limiting discussion regarding the presence of firearms in homes with children. APSA opposes, in the strongest possible terms, state level legislation infringing upon the physician patient relationship**

In light of the Sandy Hook murders, there has been consideration of placing armed guards and/or armed school personnel (e.g. teachers) in the schools. To limit the risk of injury by firearms, one must limit the exposure to firearms by children. Ensuring there is a firearm present in all 100,000 U.S. public schools ensures that nearly 50,000,000 children will be exposed to at least one firearm on a daily basis.[38] It is not hard to imagine that, with the shear enormity of such an exposure and possibility of unintentional (or intentional) discharge of these weapons, arming individuals in schools will actually have the unintended consequence of increasing risk to our children. One premise for arming individuals in our schools is that it will act as a deterrent. Such might be the case if the felonious use of a firearm in a school was a rational event. It is not. A further potential unintended consequence of ensuring an armed presence in our schools is the "up arming" of a potential shooter at a school to match or exceed the weapons perceived to exist in the target school. Such a possibility would increase the likelihood of additional casualties. The practice of arming teachers in the schools may also place these well meaning educators in the way of perpetrators who have the advantage of planning. Not one of the 62 mass shootings in the last 30 years was stopped by an armed civilian.[39] **In the absence of data supporting the salutary benefits of armed personnel in schools, APSA does NOT support a standard practice of arming teachers, parents or other officials in the school setting.**

A meaningful reduction in the burden of firearms injury and death in the pediatric population will not happen with a single action nor will it happen quickly. But, the lack of a "magic bullet" is not a reason to abandon common sense efforts to limit the access and exposure to firearms for children. The systematic and dramatic reduction in motor vehicle-related injuries and death in both the adult and pediatric populations should serve as a model for success. Through modifications in the environment (roads), adoption of safety measures (seatbelts), modification of behavior (use of seatbelts) and modifications of vehicle design (e.g. airbags)--a public health approach--change was realized. Former Congressman Dickey, who helped author the bill restricting federal funding for firearms research, recently commented..."like motor vehicle injuries, violence exists in a cause-and-effect world; things happen for predictable reasons. By studying the causes of a tragic — but not senseless — event, we can help prevent another."[40] With more than 300,000,000 guns in circulation in the United States, we as an Association and we as a nation we need to develop ways to live safely in a world with guns. There are no guarantees that these measures would have prevented the tragedy at Sandy Hook, or the next Sandy Hook. But, what if they did?

APSA believes that inaction is irrational and indefensible. This organization strongly supports the continuation of legislative, public health and policy recommendations detailed above in an effort to reduce the impact of gun violence on our children and youth.

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Figure 1. Mortality causes for pediatric (age 0-19 years) patients treated in Trauma Centers, 2009-2011. Data courtesy National Trauma Data Bank, American College of Surgeons, Chicago, IL.

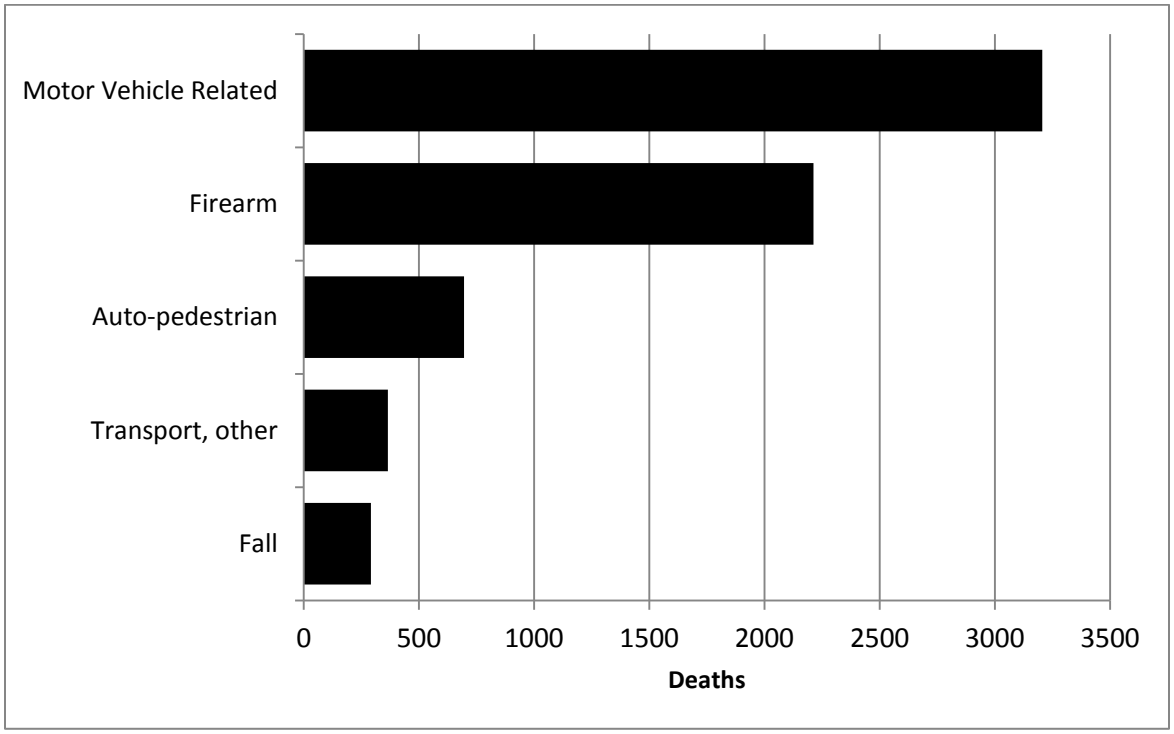

Figure 2. Firearm homicide rate (per 100,000 population) by firearm ownership (firearms per 100 inhabitants) for 20 OECD countries with the highest gross domestic product per capita. Based on data from Small Arms survey and UNODC.[5, 6]

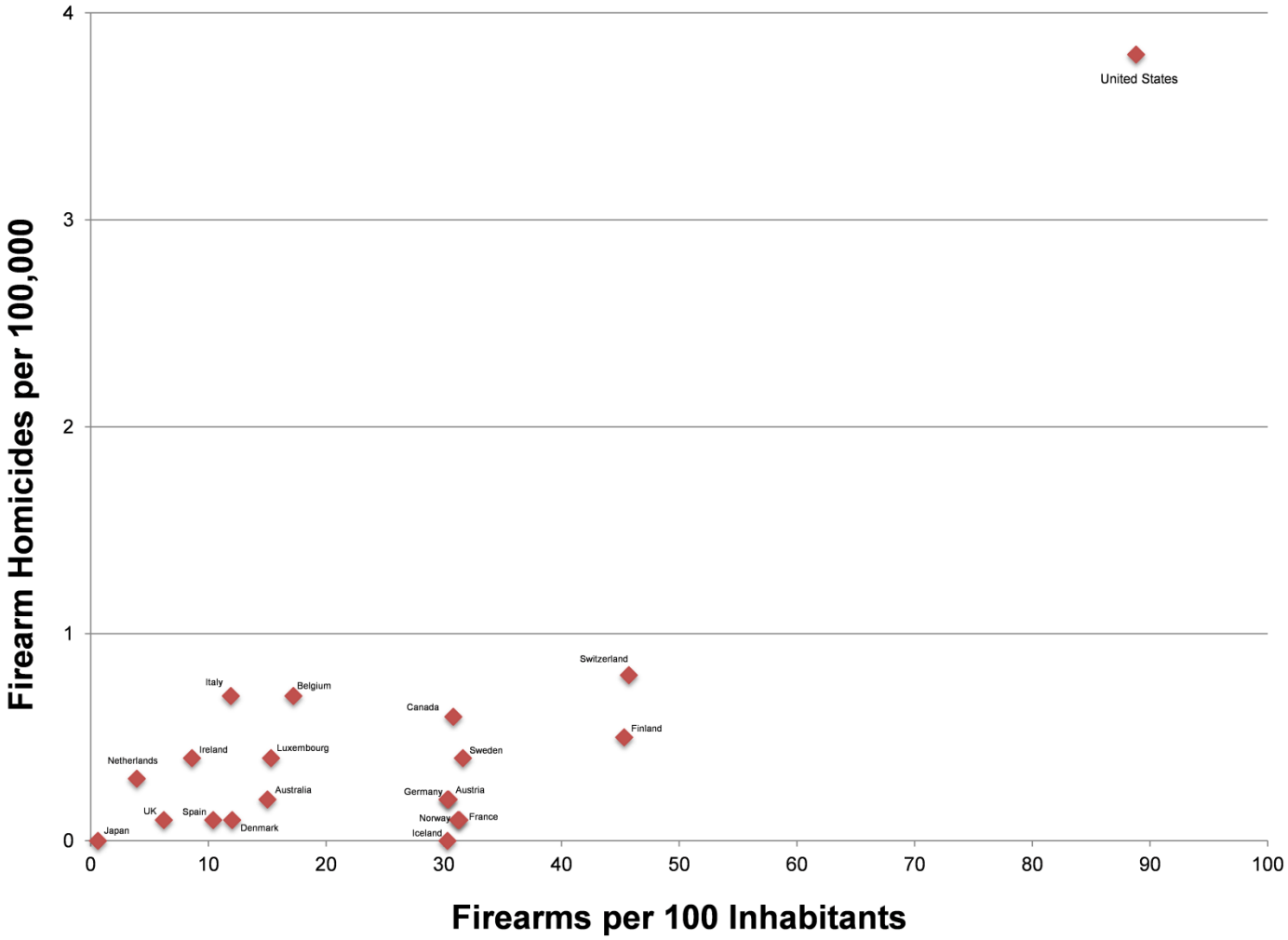

Figure 3. Regression-adjusted firearm incidence rate ratios and 95% confidence intervals by county type for firearm suicide and homicide deaths in the United States (1989-1999). County types stratified based on urban-rural continuum codes (1-largest counties to 11-smallest counties) [From Branas et al,[8] with permission]