

# What Are the Risks and Benefits of Keeping a Gun in the Home?

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PHYSICIANS have an understandable interest in the likely health consequences of keeping a gun in the home, so much so that some physicians have even urged that their fellow practitioners use their positions as guardians of health to persuade patients not to own guns, just as they might discourage drinking to excess, smoking cigarettes, or a sedentary lifestyle.<sup>1</sup> Unfortunately, both a narrow focus on the home environment and a decidedly one-sided view of the violence-related uses to which guns are put has skewed the portrayal of this issue in medical journals. This article is intended to broaden the focus and introduce readers to relevant information that has not heretofore been presented, or has been presented in a misleading fashion, in the medical and public health literature on firearms and violence.

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## THE FOCUS ON THE HOME

It is unduly narrow to study the issue of the risks and benefits of gun ownership just from the standpoint of gun ownership in the home. The chief risks of gun availability are deaths and injuries inflicted with guns, while the chief benefits are instances of preventing death and injury through the defensive use of guns. Yet, the vast majority of both harmful and beneficial uses of guns occur outside the home. For example, of 11 984 gun homicides committed in Chicago, Ill, between 1965 and 1990, only 2962 (24.7%) were committed in a home and not all of these occurred in the victim's home.<sup>2</sup>

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**See also p 471.**

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Further, contrary to the understandable imagery of in-home violence as domestic violence, most killings in the home involve killers who do not live in that home and who, if they used a gun,

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usually would use their own guns, brought in from elsewhere. Based on the relationship of victim and offender, only 7.2% of all US homicides committed between 1976 and 1994 were committed (1) with guns and (2) by a person whose relationship to the victim was as a spouse, lover, sibling, parent, child, or roommate, indicating that there was a significant likelihood that they lived in the same home as the victim.<sup>3</sup> Thus, it is quite uncommon for people to be killed with guns by members of their own household. Likewise, only 18% to 37% of defensive uses of guns occur inside the home of the victim/defender.<sup>4,5</sup>

On the other hand, the overwhelming majority of gun suicides, and two thirds of unintentional gun-related fatalities, occur in a home, usually the victim's home.<sup>5</sup> Nevertheless, the public policy debate surrounding gun control has primarily revolved around the risks of victimization in homicides and other crimes, perhaps because there is less popular consensus on the role of legislation in preventing people from taking their own lives than there is for the control of violence directed at other people, and because less than 4% of gun deaths are unintentional.<sup>5</sup> Also, while guns are involved in about 60% of suicides,<sup>5</sup> a causal impact of gun availability on the occurrence of suicides (as distinct from its impact on the choice of shooting over other suicide methods) seems to be either too small to be detected in the aggregate or confined to adolescents, who account for only 7% of US suicides.<sup>5</sup> Only 2 case-control studies of adults claim that gun ownership is associated with an increased risk of suicide,<sup>6,7</sup> while a third study found no increase in suicide risk.<sup>8</sup>

Nevertheless, from the standpoint of personal safety, the advisability of keeping a gun in the home is a significant topic because people want to know whether they increase or decrease their risk if they acquire a firearm. For this purpose, it is especially important to have information on risks and benefits pertaining to the average person, not just those with unusually high risks of involvement in violence.

#### THE BALANCE OF AGGRESSIVE AND DEFENSIVE USES OF GUNS IN THE HOME

In the United States in 1993, based on national victim surveys counting both incidents reported to the police and those not reported, there were an estimated 1.02 million violent incidents in which the victim believed that the offender possessed a gun. In many, perhaps most, of these incidents, the offender did not actually use the gun.<sup>9</sup> Of all violent incidents with or without a gun, about 15.2% occurred in the home.<sup>10</sup> Assuming gun crime incidents are distributed by location the same as all violent incidents, these data imply that there were about 155 000 violent incidents in the home committed by offenders with guns.

On the other hand, that same year there were an estimated 2.55 million defensive gun uses (DGUs), 37.3% of them in the victim/defender's home, or about 950 000 in the home.<sup>9</sup> Although gun control advocates have questioned DGU estimates,<sup>4,11</sup> the claim of large numbers of DGUs has been confirmed in at least 16 surveys, and the criticisms concerning flaws in DGU surveys have been rebutted.<sup>5,9,12</sup> These criticisms were based on one-sided speculation about errors in surveys, rather than empirical evidence. To date, there is no empirical evidence that false-positive reports of DGU outnumber false negatives (ie, failure to report DGUs), and thus no foundation for the claim that surveys overestimate the prevalence of DGUs.<sup>12</sup> In sum, the best available estimates indicate that there are about 6 times as many DGUs in US homes each year as criminal/aggressive uses (950 000:155 000).

Further, empirical evidence indicates that DGU is effective. Based on national victim surveys conducted by the US Bureau of the Census, gun-using victims are less likely to be injured or to lose property than otherwise similar victims in similar circumstances using any other self-protection strategy, including not resisting at all.<sup>5</sup> It is rare that gun-using victims are injured, and when they are, the injury was usually inflicted before they used the gun.<sup>5</sup> For example, less than 6% of gun-using robbery victims are injured after defensive use of the gun, and some of these injuries most likely would have been inflicted regardless of resistance.<sup>5</sup>

Nonfatal injuries resulting from DGU are rare, and deaths are extremely rare. Research from 3 large urban counties<sup>13</sup> indicated that from 1987 to 1992, of 1860 total homicides, there were 21 known cases (1%) of victims who were killed after resisting with a gun in their homes (about 1 such incident per year per large county).<sup>13</sup> This was a rate of 0.122 fatal home DGUs per 100 000 population per year. If applied to the 1992 US population of 255 million, this rate would imply about 340 home DGUs in which the victim/defender was killed in the United States each year, compared with an estimated 950 000 total DGUs in the home.

Current evidence suggests that DGU is effective in preventing injury, and that defensive uses of guns in the home are substantially more numerous than criminal-aggressive uses in the home. This does not, however, conclusively prove that the net effect of keeping guns in the home is to make residents safer, especially with respect to the risks of a resident being murdered. While this evidence supports such a view, it is not conclusive since it is possible that home defensive uses do not prevent homicide deaths often enough to outweigh home deaths caused by gun use. Although there are hundreds of thousands of DGUs each year in which defenders would claim, if asked, to have saved a life,<sup>9</sup> it is not possible to directly count the number of DGUs that actually did save a life.

#### CASE-CONTROL STUDIES ON GUN OWNERSHIP AND HOMICIDE

The claim that keeping a gun in the home, on balance, increases the risk of homicide victimization rests most heavily on a case-control study by Kellermann and colleagues.<sup>13</sup> These authors identified victims of 420 homicides occurring in the victim's home in 3 urban counties during 1987 to 1992, and then located controls in the same neighborhoods, who were matched based on sex, race, and approximate age. After statistically controlling for 5 other homicide victimization covariates, they found that persons living in a household with a gun were 2.8 times more likely to be a victim of homicide.

This association was at least partly attributable to confounding factors that are known to be strongly associated with both gun ownership and homicide victimization, such as dealing in illicit drugs (but not drug use) and membership in a street gang. Either of these confounding factors alone is associated strongly enough with gun ownership and homicide victimization to produce a spurious odds ratio of 2.8,<sup>14</sup> and neither factor was controlled by the researchers. Indeed, most factors that increase the risk of homicide victimization in a way that is evident to the subjects are likely to also motivate some of them to acquire a gun for self-protection.<sup>15</sup> Thus, a positive gun-homicide association is expected even if gun possession had no impact whatsoever on homicide risk. Further, the authors presented no evidence that any of the home homicides they stud-

ied were actually committed with guns kept in the victim's home. Of the 1860 total homicides committed in the 3 study counties, 444 were committed in the victim's home, and 221 of these were committed with a gun.<sup>13</sup> However, reanalysis of these data indicates that of these 221 homicides, only 88 (4.7% of the total 1860) involved a suspect whose relationship to the victim was that of spouse, lover, sibling, parent, child, or roommate (including 4 spouse or lover cases committed outside the home but in an adjacent building or yard).<sup>16</sup> Thus, even among the relatively rare home-gun homicides, most of the killings were committed by nonresident killers who presumably used guns brought in from the outside. This raises the question of how victim household gun ownership could substantially increase a person's risk of homicide victimization, given that so small a share of homicide victims are killed with a gun kept in the victim's home.

In addition, it is difficult to generalize the results of this study to the US gun-owning population, due to the fact that both cases and controls were largely drawn from high crime, low-income, predominantly minority urban neighborhoods (ie, unusually high-risk settings). Moreover, even moderate amounts of error in measuring gun ownership, of a degree no greater than the authors themselves have documented,<sup>17</sup> would be sufficient to create the modest gun-homicide association they observed.<sup>5</sup> Finally, the study tried to indirectly approach gun effects on the likelihood of committing homicides indirectly by studying homicide victimization. If having a gun in the home makes it more likely that a resident will be murdered, it is because it is more likely that a resident will use the gun to shoot someone in the home.

A more recent case-control study by Cummings et al<sup>7</sup> also has serious methodological problems, including even fewer controls for confounding factors, fewer homicide victims, and a more eccentric sample—members of a Washington State health maintenance organization. The authors found that handgun purchases were as strongly associated with nongun homicide as with gun homicide, suggesting that these associations were attributable to uncontrolled confounding risk factors associated with handgun purchase, rather than a causal effect of handguns on homicide victimization.<sup>7</sup>

A recent case-control study by Kleck and Hogan<sup>15</sup> approached this topic more directly by examining the commission of homicide rather than victimization, and with a larger and more representative sample that allowed generalizations to the US population. Comparing a representative national sample of 1095 incarcerated individuals convicted of murder, who had been asked about their preincarceration gun ownership, with a representative national sample of 12 074 members of the general adult population, and controlling for a large number of important confounding factors (age, sex, race, Hispanic ethnicity, income, marital status, education, region, parental status, and military service), the authors found only a weak (odds ratio, 1.36; 95% confidence interval, 1.27-1.45) association between gun ownership and the commission of homicide, one that was statistically significant only because their sample size (unweighted n, 7372) was so large. However, Kleck and Hogan noted that since they could not control for drug-dealing activity or gang membership any more than previous researchers did, it was likely that this weak association was spurious.<sup>15</sup> Nevertheless, definitive answers to the question of whether the weak gun-homicide association is completely spurious will have to await research that explicitly measures and controls for important unmeasured confounding factors.

## CONCLUSIONS

Probably less than 5% of US homicides are committed in the victim's home by killers using guns kept in that home.<sup>15</sup> Further, the slight risk of such an event occurring is almost completely confined to unusually high-risk subsets of the population, since contrary to widespread belief, gun violence is largely confined to persons with a prior history of criminal behavior.<sup>5</sup>

Even within these high-risk groups, it is not known whether the net causal effect of gun ownership is to increase the risks of homicide victimization, given that the gun-homicide association found in the previous research on high-risk populations was at least partly spurious. High-risk groups have a higher-than-average probability of both violence-increasing offensive uses of guns and of violence-reducing defensive uses, but it cannot yet be firmly stated whether the net effect is to increase homicides.

Defensive uses of guns are both effective in preventing injury and more common than aggressive uses, in the home or outside it. The average American household is unlikely to experience a serious gun victimization or to use a gun defensively, but the latter is far more likely than the former. In light of the flaws and weak associations of case-control research, currently available data do not provide a sound empirical basis for recommending to the average American that he or she not keep a gun in the home.

## References

1. Webster DW, Wilson MEH, Duggan AK, Pakula LC. Firearm injury prevention counseling. *Pediatrics*. 1992;89:902-907.
2. Block CR, Block RL. Homicides in Chicago, 1965-1990 (computer file) (unpublished data). Ann Arbor, Mich: Inter-university Consortium for Political and Social Research; 1994. ICPSR Study No. 8941. Machine readable data set available online via ICPSR member institutions at: <http://www.icpsr.umich.edu/archive1.html>.
3. Fox J. Uniform Crime Reports [United States]: Supplementary Homicide Reports, 1976-1992 (computer file) (unpublished data). Ann Arbor, Mich: Inter-university Consortium for Political and Social Research; 1994. ICPSR Study number 6787. Machine readable dataset available online via ICPSR member institutions at: <http://www.icpsr.umich.edu/archive1.html>.
4. Cook P, Ludwig J. *Guns in America*. Washington, DC: Police Foundation; 1997.
5. Kleck G. *Targeting Guns*. Hawthorne, NY: Aldine de Gruyter; 1997.
6. Kellermann AL, Rivara FP, Somes G, et al. Suicide in the home in relation to gun ownership. *N Engl J Med*. 1992;327:467-472.
7. Cummings P, Koepsell TD, Grossman GC, Savarino J, Thompson, RS. The association between the purchase of a handgun and homicide or suicide. *Am J Public Health*. 1997;87:974-978.
8. Beautrais AL, Joyce PR, Mulder RT. Access to firearms and the risk of suicide: a case-control study. *Aust N Z J Psychiatry*. 1996;30:741-748.
9. Kleck G, Gertz M. Armed resistance to crime. *J Crim Law Criminol*. 1995; 86:150-187.
10. US Bureau of Justice Statistics. *Criminal Victimization in the United States, 1993*. Washington, DC: US Government Printing Office; 1996.
11. Hemenway D. Survey research and self-defense gun use. *J Crim Law Criminol*. 1997;87:1430-1445.
12. Kleck G, Gertz M. The illegitimacy of one-sided speculation: getting the defensive gun use estimate down. *J Crim Law Criminol*. 1997;87:1446-1461.
13. Kellermann AL, Rivara FP, Rushforth NB, et al. Gun ownership as a risk factor for homicide in the home. *N Engl J Med*. 1993;329:1084-1091.
14. Schlesselman JJ. *Case-Control Studies*. New York, NY: Oxford University Press; 1982:56.
15. Kleck G, Hogan, M. A national case-control study of homicide offending and gun ownership. Presented at: 1996 Meetings of the American Society of Criminology; November 21, 1996; Chicago, Ill.
16. Author's reanalysis of Kellermann AL, Hackman BB, Rivara FP, and NB Rusforth. Home Safety Project, 1987-1992 (computer file). Ann Arbor, Mich: Inter-university Consortium for Political and Social Research; 1997. ICPSR Study 6898. Machine readable data set available online via ICPSR member institutions at: <http://www.icpsr.umich.edu/archive1.html>.
17. Kellermann AL, Rivara FP, Banton J, Reay D, Fligner CL. Validating survey responses to questions about gun ownership among owners of registered handguns. *Am J Epidemiol*. 1990;131:1080-1084.