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*Office of Juvenile Justice and Delinquency Prevention*

Working for Youth Justice and Safety

JUVENILE JUSTICE BULLETIN

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*Robert L. Listenbee, Administrator*

## Beyond Detention

Even though research indicates that the majority of youth in the juvenile justice system have been diagnosed with psychiatric disorders, reports issued by the Surgeon General and the President's New Freedom Commission on Mental Health show that juvenile detainees often do not receive the treatment and services they need.

This bulletin series presents the results of the Northwestern Juvenile Project, the first large-scale, prospective longitudinal study of drug, alcohol, and psychiatric disorders in a diverse sample of juvenile detainees. Individual bulletins examine topics such as suicidal behaviors in youth in detention, posttraumatic stress disorder and trauma among this population, functional impairment in youth after detention, and barriers for youth who need to receive mental health services.

Nearly all detained youth eventually return to their communities and the findings presented in this series provide empirical evidence that can be used to better understand how to meet youth's mental health needs and provide appropriate services while in detention and after their release. The Office of Juvenile Justice and Delinquency Prevention hopes this knowledge will help guide innovative juvenile justice policy and create a better future for youth with psychiatric disorders in the justice system.

# Violent Death in Delinquent Youth After Detention

Linda A. Teplin, Gary M. McClelland, Karen M. Abram, Darinka Mileusnic-Polchan, Nichole D. Olson, and Anna J. Harrison

## Highlights

This bulletin examines the results of the Northwestern Juvenile Project—a longitudinal study of youth detained at the Cook County Juvenile Temporary Detention Center in Chicago, IL. Among the issues under examination, the authors looked at mortality rates among the youth enrolled in the project.

Some findings include the following:

- The standardized mortality rate for delinquent youth is more than four times the rate for youth in the general population.
- The mortality rate for delinquent female youth is nearly eight times the rate in the general population.
- The vast majority of deaths among delinquent youth were homicides from gunshot wounds.
- African American youth continue to experience the highest mortality rate.

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Delinquent youth, who often are depicted as juvenile predators (U.S. Department of Health and Human Services, 2001), are also at great risk for injury (Laub and Vaillant, 2000; Lauritsen, Laub, and Sampson, 1992; Loeber, Kalb, and Huizinga, 2001; Menard, 2002) and early violent death (Lattimore, Linster, and MacDonald, 1997; Yeager and Lewis, 1990). Offending increases exposure to life-threatening situations (Huizinga and Jakob-Chien, 1998; Loeber et al., 1999; Menard, 2002). In their classic study of 500 white male delinquents sampled in the 1940s, Glueck and Glueck (1950) found that nearly 5 percent had died by age 32, compared with 2.2 percent of nondelinquent control subjects; by age 65, 13 percent had died unnatural deaths, compared with 6 percent of the nondelinquent control subjects (Laub and Vaillant, 2000). Another study of 118 delinquents found that 7 (5.9 percent) had died by age 25 (Yeager and Lewis, 1990). Similarly, death rates in two samples of male parolees were 3.6 percent (1,998 male subjects sampled in 1981–82 and tracked for 6 years) and 5.5 percent (1,997 male subjects sampled in 1986–87 and tracked for 11 years) (Lattimore, Linster, and MacDonald, 1997).

Previous studies do not reflect today's delinquent youth. The Glueck and Glueck study (1950; Laub and Vaillant, 2000) in the 1940s did not include black or

## ABOUT THIS SERIES

Studies in this series describe the results of statistical analyses of the Northwestern Juvenile Project, a longitudinal study of youth detained at the Cook County Juvenile Temporary Detention Center in Chicago, IL, between 1995 and 1998. The sample included 1,829 male and female detainees between ages 10 and 18. The data come from structured interviews with the youth.

Topics covered in the series include the prevalence of suicidal thoughts and behaviors among juvenile detainees, posttraumatic stress disorder and trauma within this population, functional impairment after detention (at work, at school, at home, or in the community), psychiatric disorders in youth processed in juvenile or adult court, barriers to mental health services, violent death among delinquent youth, and the prevalence of psychiatric disorders in youth after detention. The bulletins can be accessed from the Office of Juvenile Justice and Delinquency Prevention's (OJJDP's) website, ojjdp.gov.

In addition to the funding that OJJDP provided, the research also was supported by the National Institute on Drug Abuse, the National Institute of Mental Health, the National Institute on Alcohol Abuse and Alcoholism, the Substance Abuse and Mental Health Services Administration (Center for Mental Health Services, Center for Substance Abuse Prevention, and Center for Substance Abuse Treatment), the Centers for Disease Control and Prevention (National Center for Injury Prevention and Control and National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention), the National Institutes of Health Office of Research on Women's Health, the National Institute on Minority Health and Health Disparities, the Office of Rare Diseases, the Office of Behavioral and Social Sciences Research, the U.S. Departments of Labor and Housing and Urban Development, the William T. Grant Foundation, and the Robert Wood Johnson Foundation. The John D. and Catherine T. MacArthur Foundation, the Open Society Foundations, and the Chicago Community Trust provided additional funds.

Hispanic youth (now more than two-thirds of juvenile detainees) (Sickmund et al., 2011) and, like the study by Lattimore, Linster, and MacDonald (1997), did not include female youth (now 30 percent of arrested youth (Puzzanchera, 2009) and nearly 15 percent of youth in residential placement (Sickmund et al., 2011)). Even studies that included female youth (Yeager and Lewis, 1990) included too few to allow the study researchers to analyze gender differences. The Cambridge Study in Delinquent Development recently examined early death among a sample of delinquent youth in the United Kingdom (Piquero et al., 2014). Although an excellent study, generalizability is limited because the prevalence and correlates of death in the United Kingdom are quite different than those in the United States. Finally, the most recent U.S. study was conducted in the 1980s and early 1990s (Lattimore, Linster, and MacDonald, 1997), when youth homicides were increasing to record high levels (Fox and Zawitz, 2002).

Studying mortality rates among delinquent youth is timely. Homicide, the second leading cause of death for youth ages 15–24 (4,678 homicides in 2010) (Centers for Disease Control and Prevention, 2013b), is one of the only causes of death in youth to increase in incidence in the past 10 years (Xu et al., 2010). Data that the Centers for Disease Control and Prevention published show that, among African American youth, homicide is the most common cause of death (48.77 cases per 100,000) (Centers for Disease Control and Prevention, 2010, 2012). The annual homicide rate among African American youth is 3.07 times that of Hispanic youth (15.89 per 100,000) and 13.47 times that of non-Hispanic white youth (3.62 per 100,000) (Centers for Disease Control and Prevention, 2012). The groups that are at greatest risk (racial and ethnic minorities, male youth, and urban youth) are all overrepresented in the juvenile justice system (Pastore and Maguire, 2002; Snyder and Sickmund, 2006).

In this bulletin, the researchers compare mortality rates for delinquent youth with those for the general population, controlling for differences in gender, race/ethnicity, and age.

## Methods

This section provides a brief overview of the authors' methods. Additional, detailed information on the methodology can be found in Teplin et al. (2002, 2005, 2012, 2013).

### Participants and Sampling Procedures

Participants were part of the Northwestern Juvenile Project, a longitudinal study of 1,829 youth (ages 10–18) arrested and detained between November 20, 1995, and June 14, 1998, at the Cook County Juvenile Temporary Detention Center (CCJTDC) in Chicago, IL. The random sample was stratified by gender, race/ethnicity (African American, non-Hispanic white, Hispanic, or other), age (10–13 years or 14 years and older), and legal status (processed in juvenile or criminal court) to obtain enough participants to examine key subgroups (e.g., females, Hispanics, younger children). All detainees who were awaiting the adjudication or disposition of their case were eligible to participate in the study. Among these, 2,275 detainees were randomly selected; 4.2 percent (34 youth and 62 parents or guardians) refused to participate. There were no significant differences in refusal rates according to gender, race/ethnicity, or age. Twenty-seven youth left the detention center before an interview could be scheduled; 312 left CCJTDC while the authors attempted to locate their caretakers for consent. Eleven others were excluded from the sample because they were unable to complete the interview. Table 1 shows demographic characteristics of the final sample.

Like juvenile detainees nationwide, the majority of CCJTDC detainees are male and most belong to racial/ethnic minority groups (77.9 percent African American, 5.6 percent non-Hispanic white, 16 percent Hispanic, and 0.5 percent other racial/ethnic groups). The age and offense distributions of the CCJTDC detainees are also similar to detained juveniles nationwide (Snyder and Sickmund, 2006).

The authors chose the detention center in Cook County, which includes Chicago and surrounding suburbs, for three reasons:

- Nationwide, most juvenile detainees live in and are detained in urban areas (Pastore and Maguire, 2000).
- Cook County is ethnically diverse and has the third-largest Hispanic population in the United States (U.S. Census Bureau, 2001). Studying this population is important because Hispanics are the largest minority group in the United States (U.S. Census Bureau, 2000).
- The detention center's size (daily census of approximately 650 youth and intake of 20 youth per day) ensured a large enough pool of participants would be available.

The researchers have been tracking the participants since they were enrolled in the study. To ensure comparability with other studies of mortality rates (National Center for Health Statistics, 1996; Singh and Yu, 1996), the researchers examined deaths that occurred in participants who were 15–24 years old. As of March 31, 2004,

participants had been monitored for 0.5 to 8.4 years (mean: 7.1 years; median: 7.2 years); the aggregate exposure for all participants was 12,944 person-years (that is, the total number of years all participants were tracked).

Deaths were identified during contacts with participants' friends, family members, and other acquaintances; by checking death records at the Cook County Medical Examiner's office; and by submitting participants' names to the National Death Index (Centers for Disease Control and Prevention, 2013a). All deaths were verified by obtaining copies of death certificates.

The comparison group included all persons in the general population of Cook County, IL, who were 15–24 years old (U.S. Census Bureau, n.d.). The researchers obtained counts of deaths in the comparison group using the most recent source available, the National Center for Health Statistics' *Multiple Cause-of-Death Public Use Files for 1996–2001* (National Center for Health Statistics, 2004).

### Analyses

To compare mortality rates for delinquents with those in the general population, all data were weighted according to the racial/ethnic, gender, and age characteristics of the detention center's youth population; these weighted, standardized populations were used to calculate reported percentages and mortality ratios. Mortality ratios were calculated by comparing the sample's mortality with that for the general population of Cook County, controlling for differences in gender, race/ethnicity, and age.

The researchers used bootstrap methods for all inferential statistics. For a more detailed explanation, see Efron and Tibshirani (1993).

## Findings

Sixty-five participants died during the followup period. Table 2 reports their gender, race/ethnicity, and age at death. Figure 1 shows that all died as a result of external causes (World Health Organization, 1977); 95.5 percent died as a result of homicide or legal intervention (90.1 percent homicide and 5.4 percent legal intervention), and 1.1 percent of all deaths were suicides. Ninety-three percent of homicides were from gunshot wounds.

Next, the researchers compared the mortality rate from external causes among delinquents with that for the general population, controlling for gender and race/ethnicity. Table 3 and figure 2 present standardized annual mortality rates per 100,000 person-years for the sample of delinquent youth and the general population, and standardized mortality ratios comparing the sample with the general population. Figure 2 also shows the crude

Table 1. Unweighted Sample Characteristics

| Characteristic | Number of Participants (*n* = 1,829) | Percentage of Participants |
|---|---|---|
| Race/Ethnicity | | |
| African American | 1,005 | 54.9 |
| Non-Hispanic white | 296 | 16.2 |
| Hispanic | 524 | 28.7 |
| Other | 4 | 0.2 |
| Gender | | |
| Male | 1,172 | 64.1 |
| Female | 657 | 35.9 |
| Age (years) | | |
| Mean | 14.9 | |
| Median | 15 | |
| Mode | 16 | |
| Specific ages (years) | | |
| 10 | 7 | 0.4 |
| 11 | 20 | 1.1 |
| 12 | 87 | 4.8 |
| 13 | 258 | 14.1 |
| 14 | 217 | 11.9 |
| 15 | 498 | 27.2 |
| 16 | 644 | 35.2 |
| 17 | 89 | 4.9 |
| 18 | 9 | 0.5 |
| Education | | |
| 6th grade or less | 89 | 4.9 |
| 7th grade | 171 | 9.3 |
| 8th grade | 306 | 16.7 |
| 9th grade | 568 | 31.1 |
| 10th grade | 455 | 24.9 |
| 11th grade | 172 | 9.4 |
| 12th grade | 27 | 1.5 |
| Currently in GED classes | 31 | 1.7 |
| Alternative or home schooling | 5 | 0.3 |
| Unknown | 5 | 0.3 |
| Legal status | | |
| Processed in adult court (automatic transfer) | 275 | 15.0 |
| Processed in juvenile court | 1,554 | 85.0 |

Note: Percentages may not sum to 100 percent because of rounding.

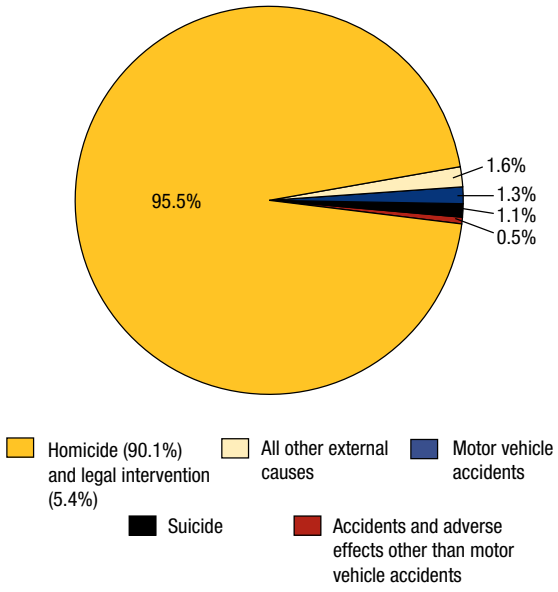
### Table 2. Numbers of Deaths in the Sample of Delinquent Youth

| | Total |
|---|---|
| **Males (*n* = 1,172)** | 51 |
| Race/ethnicity | |
| African American (*n* = 575) | 23 |
| Non-Hispanic white (*n* = 207) | 7 |
| Hispanic (*n* = 387) | 21 |
| Other (*n* = 3) | 0 |
| Age of death (years) | |
| 15–16 | 8 |
| 17–18 | 21 |
| 19–20 | 14 |
| ≥ 21 | 8 |
| **Females (*n* = 657)** | 14 |
| Race/ethnicity | |
| African American (*n* = 430) | 7 |
| Non-Hispanic white (*n* = 89) | 2 |
| Hispanic (*n* = 137) | 5 |
| Other (*n* = 1) | 0 |
| Age of death (years) | |
| 15–16 | 7 |
| 17–18 | 2 |
| 19–20 | 5 |
| ≥ 21 | 0 |
| **Total (*n* = 1,829)** | 65 |

mortality rate for 1996 to 2001 for the same age group (15–24 years old) in the general population (not corrected for gender, race/ethnicity, and age) (Arias et al., 2003; Hoyert et al., 2001; Hoyert, Kochanek, and Murphy, 1999; Minino et al., 2002; Murphy, 2000; Peters, Kochanek, and Murphy, 1998).

The standardized mortality rate for delinquent youth (806 deaths per 100,000 person-years) is approximately 4.4 times that for general-population youth (184 deaths per 100,000 person-years). Table 3 also shows that mortality ratios are substantially greater than 1 for male youth overall, for each racial/ethnic subgroup of male youth, for female youth overall, and for Hispanic female youth. Although the mortality ratios are greater in the detained population than in the community population for African American and non-Hispanic white females, these ratios are not significant. Both delinquent and general-population female youth had significantly lower mortality rates than their male counterparts. Delinquent African American male youth had the highest mortality rate (887 deaths per 100,000 person-years). However, African American male youth had the lowest mortality ratio (3.9) because their mortality rate in the general population was relatively high (228 deaths per 100,000 person-years). Test results for differences in mortality rates among racial/ethnic groups were not significant for either male or female youth, possibly because there were too few participants within racial/ethnic subgroups for detection of differences.

### Figure 1. Causes of Death in Delinquent Youth, Weighted Percentages




Note: The researchers weighted the results to the racial/ethnic, gender, and age characteristics of the detention center.

Source: Teplin et al. (2005).

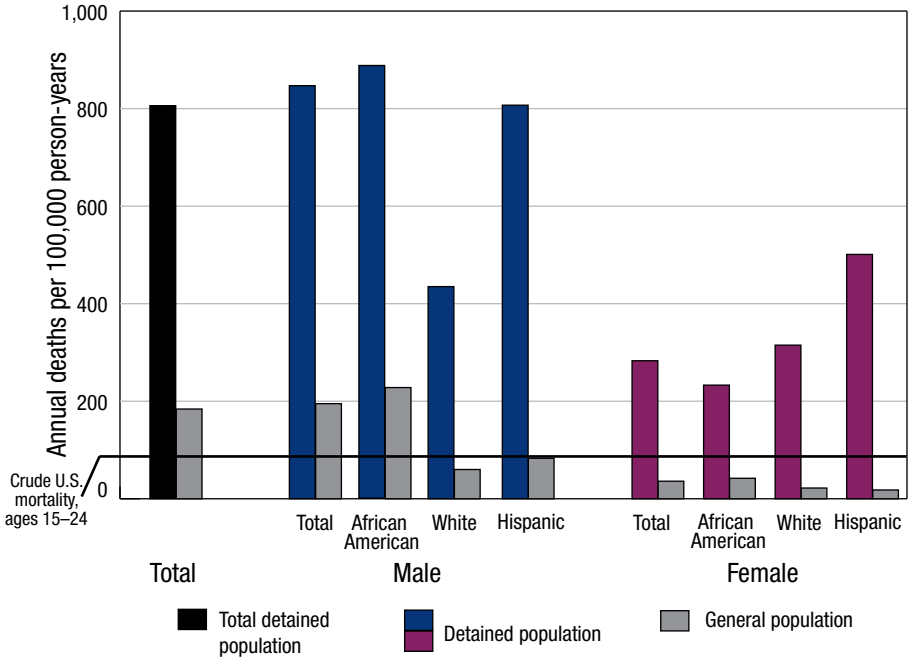
### Table 3. Standardized Rates of Death Attributable to External Causes for Delinquent and Community Youth

| | Deaths per 100,000 Person-Years | | |
|---|---|---|---|
| | Detained Population | Community Population | Mortality Ratio |
| Total | 806 | 184 | 4.4* |
| Male | 847 | 195 | 4.3* |
| African American | 887 | 228 | 3.9† |
| Non-Hispanic white | 435 | 60 | 7.3‡ |
| Hispanic | 807 | 83 | 9.8* |
| Female | 283 | 36 | 7.9* |
| African American | 233 | 42 | 5.5NS |
| Non-Hispanic white | 315 | 22 | 14.1NS |
| Hispanic | 501 | 18 | 28.5‡ |

* Significant at $p < .001$
† Significant at $p < .01$
‡ Significant at $p < .05$
NS Not significant at $p > .05$

*"Deaths from firearms affect minority youth disproportionately, both in this sample and in the general U.S. population."*

Figure 2. Standardized Mortality Due to External Causes (per 100,000 Person-Years) in Delinquent and General-Population Youth




Note: The crude mortality rate for 1996–2001 was computed from the National Center for Health Statistics reports (Arias et al., 2003; Hoyert, Kochanek, and Murphy, 1999; Hoyert et al., 2001; Minino et al., 2002; Murphy, 2000; and Peters, Kochanek, and Murphy, 1998).

## Discussion of Findings

Overall, the mortality rate among delinquent youth was more than four times higher than that in the standardized general population of Cook County. Of particular concern was the mortality rate for delinquent female youth, which was nearly eight times the general-population rate. More than 90 percent of deaths among delinquent youth were homicides, and more than 90 percent were from gunshot wounds (homicidal, accidental, or self-inflicted). To put the authors' findings (806 deaths per 100,000) in perspective, the leading causes of death among youth in the general population are accidents (37.4 deaths per 100,000 person-years), homicide (13.1 deaths per 100,000 person-years), suicide (9.7 deaths per 100,000 person-years), and malignant neoplasms (3.9 deaths per 100,000 person years) (Xu et al., 2010).

Mortality rates in this sample appeared to be as much as three times higher than those among 11- to 32-year-old delinquents and former delinquents in the 1940s study by Glueck and Glueck (1950), which examined only non-Hispanic white male youth. Mortality rates in this sample also appeared to be higher than those reported by Lattimore and colleagues (1997), although their study included only male youth, all of whom were serious offenders, and was conducted when homicide rates were at an all-time high (Fox and Zawitz, 2002). The findings of Laub and Vaillant (2000) suggest that, as delinquent youth age, they will continue to have higher mortality rates than youth in the general population.

The overall mortality rate in the sample was similar to that in an Australian study of young offenders (Coffey et al., 2003). However, nearly one-half of deaths in the Australian sample were attributable to drug overdoses, compared with only three drug overdose deaths in this study's sample. The small number of drug overdoses may be because few of the study participants used illegal drugs other than marijuana or alcohol (McClelland et al., 2004; McClelland, Teplin, and Abram, 2004). Nevertheless, many of the homicides in the sample might be drug related; nearly 97 percent of youth who die as a result of homicide have sold drugs (Howell and Decker, 1999).

The findings highlight several key public health issues. Even in the general U.S. population, youth are vulnerable to homicide. Although homicide rates have decreased since the early 1990s, they still represent 16.3 percent of all deaths among youth between the ages of 15 and 24 (Xu et al., 2010). More than one-third of homicide deaths in 2007 were persons younger than age 25 (Xu et al., 2010). On an average day in 2002, four youth younger

than age 18 became victims of homicide (Snyder and Sickmund, 2006).

Study findings highlight the role of firearms in early violent death, especially homicides. Among youth ages 15–24 in the United States, nearly 20 percent of deaths are from firearms (Xu et al., 2010); in the sample, more than 90 percent of deaths were from firearms. In the United States, more than 80 percent of homicides among youth ages 15–24 are related to firearms (Centers for Disease Control and Prevention, 2012). Nationally, only the number of deaths from motor vehicle accidents exceeds the number of homicides from gunshot wounds among youth ages 15–24 (National Highway Traffic Safety Administration, 2001).

Deaths from firearms affect minority youth disproportionately, both in this sample and in the general U.S. population (Minino et al., 2002). Of general-population youth ages 15–24 who were killed by firearms in 2007, 66 percent were African American or Hispanic (Centers for Disease Control and Prevention, 2012), compared with almost 98 percent in this sample. Among general-population African American and Hispanic youth ages 15–24 who died in 2007, 35 percent of deaths were firearm related (Centers for Disease Control and Prevention, 2010, 2012), compared with more than 90 percent in this sample. Although homicide rates have decreased among all racial/ethnic groups and ages since the mid-1990s, African Americans (regardless of gender or age) still have the highest mortality rate by far (Fox and Zawitz, 2007).

## Study Limitations

The study has several limitations. As in previous studies (Lattimore, Linster, and MacDonald, 1997; Laub and Vaillant, 2000), the researchers sampled from a detained population. Generalizability, therefore, is limited to urban youth who are apprehended and detained. Detained youth may engage in more serious delinquent acts than arrestees or youth whose delinquency is not detected. Furthermore, these findings may not be generalizable to jurisdictions outside Chicago with different patterns of firearm violence. Although this study shows a higher risk of death among formerly incarcerated youth, readers should not presume a causal relationship between the experience of incarceration and early violent death.

Although the mortality rate in this population is large compared with the death rate in the general population, there were still too few deaths in the sample to examine well-known correlates of early violent death, such as gang affiliation (Lattimore, Linster, and MacDonald, 1997), substance abuse (Valois et al., 1995), family disorganization (Caputo, 2002; Laub and Vaillant, 2000), and child physical abuse (Sabotta and Davis, 1992).

The available general-population data (1996 to 2001) are not precisely contemporaneous with deaths in the sample (June 1996 through March 2003). Bias is minimal, however, because homicide rates in the general population did not change appreciably between 2001 and 2003 (Fox and Zawitz, 2002; Snyder, 2003).

The true mortality ratios may be even greater than those observed for the following reasons:

- Because the researchers counted death only when they could obtain a death certificate, the true mortality rate in the sample might be underestimated.
- The groups (i.e., the sample and the standardized general population of Cook County) are not mutually exclusive because the comparison group (the general population) also includes youth who have been detained. Because African Americans are incarcerated at a higher rate than non-Hispanic whites (Sabol, Couture, and Harrison, 2007), findings may underestimate the increased risk of death especially in African Americans.
- Census data (the denominator with which risk is computed for the general population) undercount male subjects, minorities, youth, and persons living in

*"Perhaps nothing underscores the failure to rehabilitate at-risk youth more than their vulnerability to an early and violent death."*

central cities (Robinson, 2001; Schenker, 1993), which increases estimates of mortality rates for these groups and decreases the mortality ratio.

Overall, these limitations narrow the differences between the sample and the comparison group and reduce the power to detect them. Conversely, the true mortality ratios may be smaller than observed because 1.2 percent of deaths reported to the National Death Index do not list the cause of death (National Center for Health Statistics, 2004). Despite these limitations, the study has implications for research and for public health policy.

## Directions for Future Research

The authors suggest the following directions for future research.

### Longitudinal Studies of Violent Victimization

Longitudinal descriptive studies would provide information about resilience to violent victimization in high-risk groups, the risk factors that distinguish high-risk from low-risk groups, and the modifiable risk factors related to youth's behavior whose reduction holds the greatest promise for preventing violent death among youth (e.g., fighting, carrying weapons, belonging to a gang). Longitudinal intervention studies could inform public health professionals about the effectiveness and persistence of prevention strategies, about which programs warrant investment and for which risk groups, and whether gender-specific and culturally specific interventions warrant the additional effort. It is important to study youth as they make the transition from adolescence into young adulthood, the period of greatest risk.

### Studies of Delinquent Female Youth

Despite the relatively small numbers of female youth in the juvenile justice system (30 percent of arrested youth) (Puzzanchera, 2009), research on this group is needed. Compared with delinquent male youth, female youth are more likely to have histories of physical and sexual abuse and certain psychiatric disorders (Abram et al., 2003, 2004; Teplin et al., 2002, 2003). Intimate partner violence and pregnancy-associated homicide are particularly important areas for study (Abbott et al., 1995; Chang et al., 2005; Silverman et al., 2001). Even in the general population, female youth younger than age 24 are 10 times more likely than male youth to be killed by intimate partners (Greenfeld et al., 1998).

### Suicidal Ideation and Risk Among Minority Youth

Suicide is now the third leading cause of death among African American youth ages 15–19 (Heron, 2010). The rate increased from 2.1 deaths per 100,000 person-years in 1980 (for youth ages 10–19) to 4.5 deaths per 100,000 person-years in 1995 (Centers for Disease Control and Prevention, 1998), and suicide is now nearly as common in minority youth as in nonminority youth (Gould et al., 2003). In the study sample, African American male youth had a significantly higher mortality rate than other groups; however, no deaths were recorded officially as suicide. The true suicide rate among minority youth may be much higher than indicated by the findings. Some studies (Gould et al., 2003; Joe and Kaplan, 2001; Poussaint and Alexander, 2000) suggested that African American youth may express suicidal intent by putting themselves at risk for homicide. Additional research is needed to examine the ways in which suicidality manifests itself as violent death among minority youth.

## Implications for Public Health Policy

Medical, public health, and juvenile justice professionals must take the following steps:

First, early violent death should be addressed as aggressively as any other health disparity. Compared with non-Hispanic white youth, minority youth have a much greater risk of early violent death. Moreover, minorities are overrepresented in the justice system. One

study found that more than one-fourth of low-income, urban, African American youth have been arrested by the time they were 18 years old (Reynolds, 1998). Nearly 1 in 9 African American males in their twenties and early thirties are incarcerated at any given time, compared with approximately 1 in 25 Hispanic and 1 in 60 non-Hispanic white males (West, 2010).

Second, delinquency-prevention and violence-prevention programs should be implemented. Attempts to reduce violence can begin by addressing common modifiable risk factors, such as physical fighting (reported by 33 percent of general-population youth in grades 9 through 12) (Centers for Disease Control and Prevention, 2004), carrying weapons (reported by 17.1 percent of youth) (Centers for Disease Control and Prevention, 2004), and gang membership (reported by 9 percent of youth) (Taylor et al., 2008). Delinquency prevention programs could reduce the number of offenders who also become victims (Loeber et al., 1999; Loeber, Kalb, and Huizinga, 2001). Interventions must be tailored to youth of widely varying social, economic, cultural, and ethnic backgrounds and should include parent training, mentoring, home visitation, and education (Thornton et al., 2002).

Third, violence-prevention interventions should be implemented in nontraditional settings. Community-based programs can augment school-based interventions. Public health, criminal justice, and educational experts must collaborate to develop interventions in nontraditional settings for youth who do not attend school regularly. For example, interventions in urban detention centers would reach youth who are at greatest risk: male youth, racial/ethnic minority youth, older teens, and urban youth. Moreover, these interventions would be more likely to reach high-risk youth who cycle through the juvenile justice system at some time during adolescence (Teplin et al., 2002, 2003). Referrals from juvenile courts to violence-prevention programs could impact youth involved in the 1.2 million delinquency cases per year (Hockenberry and Puzzanchera, 2014; Snyder and Sickmund, 2006).

Fourth, U.S. firearms policies should be evaluated in terms of national public health. In 2007, 31,224 persons of all ages died from firearms in the United States, and more than one-fifth of victims were 15–24 years old (Xu et al., 2010). A World Health Organization report on violence and health (Krug et al., 2002) shows that the rate of death from firearms in the United States is more than 3 times higher than that in Canada, more than 6 times higher than that in Australia, and nearly 38 times higher than that in the United Kingdom. Although the consequences of gun violence against youth are incalculable, the financial costs are estimated at $15 billion per year (Kizer et al., 1995; Cook and Ludwig, 2002).

Fifth, conditions correlated with early violent death should be improved. Many detained youth are poor (Dembo et al., 2000; Domalanta et al., 2003; McCabe et al., 2002). Since the 1970s, income segregation (in addition to racial/ethnic segregation) has resulted in increased concentration of poverty in U.S. cities (Jargowsky, 1996). Reducing poverty, segregation, and de facto racial/ethnic isolation, which are known correlates of illness, violence, death, and homicide, could also reduce violence among youth (Rosenberg, O'Carroll, and Powell, 1992).

Sixth, mental health services for high-risk youth should be improved. Nearly three-fourths of detained female youth and two-thirds of detained male youth have more than one psychiatric disorder (Abram et al., 2003; Teplin et al., 2002). The Surgeon General reports that, despite the need for mental health treatment, insufficient services are available for delinquent youth in detention centers and after they return to their communities (U.S. Public Health Service, 2000). Treating youth who have behavioral or substance use disorders may reduce the risk of victimization by curtailing high-risk lifestyles associated with these disorders (Loeber et al., 2004). Moreover,

treating youth who have substance use or mood disorders may decrease suicidal risk (Shaffer et al., 1996).

## Conclusion

Perhaps nothing underscores the failure to address mental health needs and to rehabilitate at-risk youth more than their vulnerability to an early and violent death. Ironically, mass shootings (144 deaths between 2010 and 2012; annotated table available from the authors), which comprise a small fraction of gun deaths in the United States (Bjelopera et al., 2013), have received far more media attention than have homicides of inner-city youth. Mass shootings capture the nation's attention because of their drama and potential for contagion, but in 2010 alone, 11,078 people were murdered using firearms (Centers for Disease Control and Prevention, 2012). Health professionals must address the equally tragic, if less dramatic, daily violence that affects urban, delinquent youth.

## For More Information

This bulletin was adapted from Teplin, L.A., McClelland, G.M., Abram, K.M., and Mileusnic, D. 2005. Early violent death among delinquent youth: A prospective longitudinal study. *Pediatrics* 115:1586–1593.

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