

**Detained Youth:
Psychiatric Disorders,
Barriers to Mental Health Services,
Violent Death**

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OJJDP

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.

Psychiatric Disorders in Youth After Detention

Linda A. Teplin, Leah J. Welty, Karen M. Abram, Mina K. Dulcan, Jason J. Washburn, Kathleen McCoy, and Marquita L. Stokes

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. The authors discuss the findings related to the prevalence and persistence of psychiatric disorders in youth after detention.

Key findings include the following:

- Five years after the first interview, more than 45 percent of male juveniles and nearly 30 percent of female juveniles had one or more psychiatric disorders.
- Substance use disorders were the most common and most likely to persist. Males had higher prevalence rates of substance use disorders over time.
- As compared to African Americans, non-Hispanic whites and Hispanics had higher rates of substance use disorders.
- Females had higher rates of depression over time.





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Psychiatric Disorders in Youth After Detention

Linda A. Teplin, Leah J. Welty, Karen M. Abram, Mina K. Dulcan, Jason J. Washburn, Kathleen McCoy, and Marquita L. Stokes

Psychiatric disorders are prevalent among incarcerated juveniles (Rohde, Mace, and Seeley, 1997; Timmons-Mitchell et al., 1997; Wasserman et al., 2002), a fact that a 2008 literature review, which concluded that psychiatric disorders are substantially more common in adolescents in detention than among adolescents in the general population, further confirms (Fazel, Doll, and Långström, 2008). The Northwestern Juvenile Project found that at intake to detention, even after excluding the most prevalent disorder found in detained populations—conduct disorder—more than 60 percent of juvenile detainees met the diagnostic criteria for one or more psychiatric disorders (Teplin et al., 2002). Among youth incarcerated for 9 months, Karnik and colleagues (2009)

found even higher rates—approximately 90 percent of detainees had a psychiatric disorder other than conduct disorder or oppositional defiant disorder. Using only the lower rate mentioned above (Teplin et al., 2002), an estimated 36,800 of the 61,423 youth held in U.S. correctional facilities each day (Sickmund et al., 2013) have 1 or more psychiatric disorders.

For many of these juveniles, psychiatric disorders will persist as they become young adults because of their continual exposure to numerous risk factors—including maltreatment (Dixon, Howie, and Starling, 2004; Gover, 2004; Wareham and Dembo, 2007), dysfunctional families (Dembo et al., 2007; Dixon, Howie, and Starling, 2004),

ABOUT THIS SERIES

Studies in this series describe the results of statistical analyses of the Northwestern Juvenile Project, the first comprehensive 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.

family substance abuse (Wareham and Dembo, 2007), and brain injury (Perron and Howard, 2008). With few protective factors to offset these risks, many delinquent youth are vulnerable to continued psychiatric morbidity as they age (Wareham and Dembo, 2007).

Despite their importance, few longitudinal studies have examined the prevalence and persistence of psychiatric disorders after youth leave detention. Instead, studies of delinquent youth have focused on the association between psychiatric disorders and criminal recidivism, antisocial behavior, or social functioning (Douglas, Epstein, and Poythress, 2008; Hiscoke et al., 2003; Randall et al., 1999). Harrington and colleagues (2005)—the only longitudinal study of the persistence and prevalence of psychiatric disorders in detained youth—found that 2 years after detention, many mental health problems persisted or worsened. However, their sample excluded females, was 80 percent white, and was too small ($n = 97$) to permit detailed analyses. Moreover, the study was conducted in the United Kingdom, limiting its applicability when generalized to juvenile detainees in the United States.

The related literature—longitudinal studies of high-risk youth—also provides little information. Youth with histories of detention have been included in studies of high-risk youth: homeless youth (Craig and Hodson, 2000; Meyer et al., 2009), youth living in impoverished or high-crime neighborhoods (Cohen et al., 2007; Fothergill et al., 2008; Mason et al., 2004), and the offspring of parents who have used substances or have psychiatric disorders themselves (Buu et al., 2009; King and Chassin, 2007, 2008; Nigg et al., 2006). Yet, none of these studies distinguished between youth with and without histories of detention.

In sum, the researchers do not know of any large-scale longitudinal study that has examined the prevalence and persistence of psychiatric disorders after youth leave detention. This omission is critical. Among detained juvenile offenders, only 28 percent of youth are in facilities 30 days or more (Snyder and Sickmund, 2006), which greatly limits any efforts to diagnose and treat them; therefore, they may pose problems in the community when they are released and may continue to burden society as they age. Epidemiologic studies are the first step to improving prevention and treatment in correctional facilities and in the community (U.S. Department of Health and Human Services, 2011). Data are also needed to address health disparities, a priority of Healthy People 2020 (U.S. Department of Health and Human Services, 2014) and the Institute of Medicine (Smedley, Stith, and Nelson, 2003). African Americans and Hispanics comprise one-third of the general population (see table 11 in U.S. Census Bureau, 2014) but make up nearly two-thirds of

the approximately 500,000 incarcerated youth and young adults (age 24 and younger) (Sickmund et al., 2013; West, 2010).

In this bulletin, the authors examine changes in the prevalence and persistence of disorders during the 5 years after detention, focusing on gender and racial/ethnic differences.

Methods

This section provides a brief overview of the authors' methods. Additional, detailed information on the authors' methods, statistical analysis, and potential bias from attrition can be found in Teplin et al. (2012).

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 adult court) to obtain enough participants to examine key subgroups (e.g., females, Hispanics, younger children).

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.

Table 1. Sample Characteristics at Baseline, Time 1, and Time 2

| Characteristic | Baseline (<i>n</i> = 1,829) | | Time 1 (<i>n</i> = 1,659) ¹ | | Time 2 (<i>n</i> = 1,561) ² | |
|-----------------------------|---------------------------------|---------|--|---------|--|---------|
| | Number | Percent | Number | Percent | Number | Percent |
| Race/Ethnicity | | | | | | |
| African American | 1,005 | 54.9 | 927 | 55.9 | 893 | 57.2 |
| Non-Hispanic white | 296 | 16.2 | 267 | 16.1 | 242 | 15.5 |
| Hispanic | 524 | 28.6 | 461 | 27.8 | 423 | 27.1 |
| Other | 4 | 0.2 | 4 | 0.2 | 3 | 0.2 |
| Gender | | | | | | |
| Male | 1,172 | 64.1 | 1,054 | 63.5 | 993 | 63.6 |
| Female | 657 | 35.9 | 605 | 36.5 | 568 | 36.4 |
| Legal Status at Detention | | | | | | |
| Processed in adult court | 275 | 15.0 | 263 | 15.9 | 244 | 15.6 |
| Processed in juvenile court | 1,554 | 85.0 | 1,396 | 84.1 | 1,317 | 84.4 |
| | Age (years) | | Age (years) | | Age (years) | |
| Age | | | | | | |
| Mean (<i>SD</i>) | 14.9 (1.4) | | 18.1 (1.5) | | 19.8 (1.5) | |
| Median | 15 | | 18 | | 20 | |
| Range | 10–18 | | 13–22 | | 14–24 | |

SD = standard deviation.

Note: Percentages may not sum to 100 due to rounding.

¹ At time 1, 90.7 percent of the participants were interviewed. Of the remaining participants at baseline, 32 had died, 5 refused participation, 41 were lost to followup, and 92 had followup interviews that were out of range.

² At time 2, 85.3 percent of the participants were interviewed. Of the remaining participants at baseline, 50 had died, 25 refused participation, 76 were lost to followup, and 117 had followup interviews that were out of range.

Baseline interviews. All detainees who were awaiting the adjudication or disposition of their case were eligible to participate in the study. Among them, 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 by gender, race/ethnicity, or age. The final sample size was 1,829: 1,172 males and 657 females; 1,005 African Americans, 296 non-Hispanic whites, 524 Hispanics, and 4 of other race/ethnicity; with an age range of 10 to 18 years (a mean of 14.9 years and a median of 15 years) (see table 1). Face-to-face structured interviews were conducted at the detention center in a private area, most within 2 days of intake.

Followup interviews. Participants were interviewed at various followup points. Followup interviews were scheduled at 3 years (time 1) and 4.5 years (time 2) after baseline interviews; two additional interviews were scheduled at 3.5 years and 4 years for a random subsample of 997 participants (600 males and 397 females). The median time between baseline and the time 1 interview was 3 years, with a range of 2.7 to 4.5 years. For simplicity, the time 1 interview is considered to occur approximately 3 years after baseline. The median time between baseline

and the time 2 interview was 4.7 years, with a range of 4.3 to 6 years. For simplicity, the time 2 interview is considered to occur approximately 5 years after baseline. All interviews were used to examine gender and racial/ethnic differences and to identify changes over time. Teplin and colleagues (2012) contains more information about the statistical analyses.

Analyses

This section discusses methods used in the study.

Baseline interviews. The researchers used the Diagnostic Interview Schedule for Children (DISC), version 2.3 (Fisher et al., 1993; Shaffer et al., 1996), the most recent English and Spanish versions available at the time. This version, based on the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R*; American Psychiatric Association [APA], 1987), assesses the presence of disorders in the past 6 months. It is highly structured, contains detailed symptom probes, has acceptable reliability and validity, and requires relatively brief training (Piacentini et al., 1993; Schwab-Stone et al., 1993, 1996; Shaffer et al., 1993, 1996). Because DISC 2.3 did not include posttraumatic stress disorder (PTSD), the researchers used the module from DISC-IV when it

became available 13 months after the study began (Abram et al., 2004). Additional information about baseline diagnostic decisions can be found in other sources (Abram et al., 2003, 2004; Teplin et al., 2002).

Followup interviews. The researchers administered DISC-IV (child and young adult versions), based on *DSM-IV* (APA, 1994), to assess for schizophrenia, mood disorders, anxiety disorders, attention-deficit/hyperactivity disorder, and disruptive behavior disorders in the past year (Shaffer, Fisher, and Lucas, 2003; Shaffer et al., 2000). They defined impairment as moderate impairment in at least one area of functioning (Canino et al., 2004). The researchers present all analyses using the impairment criterion.

To assess substance use disorders and antisocial personality disorder (APD) at followup, researchers administered the Diagnostic Interview Schedule, version IV (DIS-IV) (Compton and Cottler, 2004; Robins et al., 1995). They used DIS-IV to assess substance use disorders because DISC-IV is not sufficiently detailed for the study population. APD was assessed for participants age 18 and older (who are no longer eligible for diagnoses of childhood disruptive behavior disorders). Disorders are assessed for the year prior to the interview. In accordance with the National Comorbidity Survey Replication (Kessler et al., 1994), participants who met criteria for substance use disorder or APD with “partial recovery” were scored as having the disorder.

Comparability of diagnoses over time. The diagnostic measures changed over time for three reasons: (1) the release of the DISC-IV (based on the *DSM-IV* criteria) midstudy, (2) some participants turned 18 years old and were therefore ineligible for childhood disruptive behavior disorders, and (3) the need to use a more comprehensive measure of substance use disorder (DIS-IV) for the followup interviews. Researchers analyzed measurement factors to ensure that they did not affect results.

Findings

This section discusses study findings.

Prevalence

Table 2 reports prevalence rates of disorders at baseline, time 1, and time 2 for males and females. Tables 3 and 4 show prevalence rates of disorders by race/ethnicity for males and females.

At time 2, more than 45 percent of males and nearly 30 percent of females had a disorder

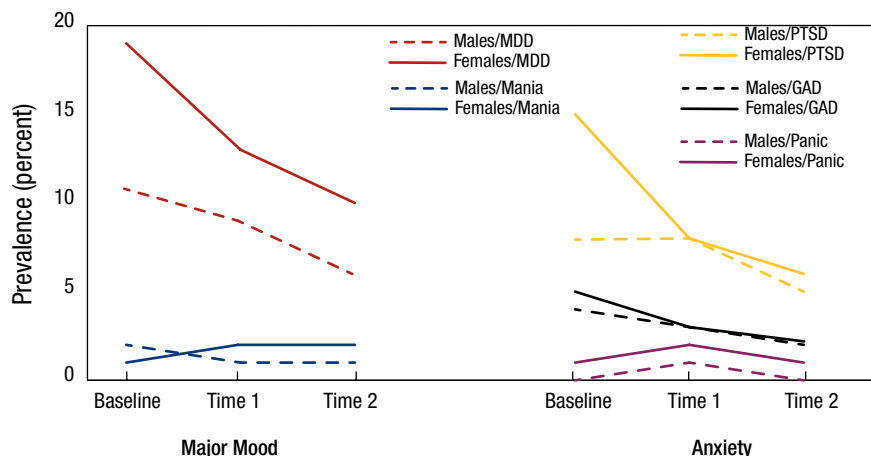
(with impairment). Even excluding disruptive behavior disorders, 37 percent of males and 25 percent of females had a disorder. Among males, 44 percent of African Americans, 50 percent of Hispanics, and 64 percent of non-Hispanic whites had a disorder at time 2. More than one-quarter of African American females and more than one-third of Hispanic and non-Hispanic white females had a disorder.

Mood disorders. Other than mania, the prevalence rates for mood disorders decreased as the participants aged. Over time, females had higher rates of any mood disorder than males. Figure 1 shows prevalence rates of major mood disorders over time by gender. The only significant racial/ethnic difference was for mania, which was more prevalent among minorities over time.

Anxiety disorders. The prevalence of panic disorder increased slightly overall. Figure 1 shows changes in prevalence rates over time by gender. Females had higher rates of any anxiety disorder. Compared with non-Hispanic whites, Hispanics were more likely to have an anxiety disorder and its subcategory, PTSD. Compared with African Americans, Hispanics were more likely to experience panic disorder. In addition, African Americans were more likely than non-Hispanic whites to have PTSD, although non-Hispanic whites were more likely than African Americans to have panic disorder.

Disruptive behavior disorders. The prevalence of any disruptive behavior disorder decreased over time, but the rate of this decrease depended on gender. Males and females did not have significantly different rates of disruptive behavior disorder at baseline, but the prevalence of these disorders decreased faster among females than

Figure 1. Past-Year Prevalence of Major Mood and Anxiety Disorders



MDD = major depression, PTSD = posttraumatic stress disorder, GAD = generalized anxiety disorder.

Table 2. Prevalence of Disorder at Baseline, Time 1, and Time 2 for Males and Females

| Disorder | Males (Percent) | | | Females (Percent) | | |
|--|-----------------|--------|--------|-------------------|--------|--------|
| | Baseline | Time 1 | Time 2 | Baseline | Time 1 | Time 2 |
| Any Disorder¹ | 61.8 | 51.7 | 46.5 | 65.3 | 42.9 | 29.0 |
| Any Disorder Except Behavioral¹ | 60.2 | 45.1 | 36.9 | 62.9 | 38.6 | 25.3 |
| Schizophrenia² | — | 0.2 | 0.1 | — | 0.2 | 0.0 |
| Any Mood Disorder | 15.8 | 14.9 | 8.8 | 22.8 | 17.0 | 11.9 |
| Any major mood disorder | 12.7 | 9.5 | 6.4 | 19.9 | 13.2 | 10.4 |
| Mania | 2.0 | 0.5 | 0.7 | 1.2 | 1.6 | 1.5 |
| Major depression | 11.0 | 9.1 | 6.4 | 18.9 | 12.7 | 10.2 |
| Hypomania | 2.1 | 6.3 | 2.1 | 0.3 | 4.1 | 0.8 |
| Dysthymia | 9.9 | 1.1 | 1.0 | 12.5 | 1.5 | 0.7 |
| Any Anxiety Disorder¹ | 10.8 | 9.8 | 7.7 | 18.9 | 12.4 | 8.1 |
| Generalized anxiety disorder | 3.8 | 2.6 | 1.9 | 5.1 | 3.3 | 2.1 |
| Panic disorder | 0.1 | 1.4 | 0.5 | 1.0 | 2.3 | 0.9 |
| Posttraumatic stress disorder ¹ | 7.9 | 7.6 | 5.4 | 14.6 | 7.9 | 5.8 |
| Attention-Deficit/Hyperactivity Disorder (<18 years)³ | 11.2 | 6.5 | 4.2 | 16.4 | 9.7 | 0.0 |
| Any Disruptive Behavior Disorder⁴ | 29.5 | 21.9 | 22.1 | 34.6 | 16.6 | 7.3 |
| Conduct disorder (<18 years) ³ | 24.3 | 20.5 | 9.3 | 28.5 | 13.5 | — |
| Oppositional defiant disorder (<18 years) ³ | 12.6 | 15.7 | 10.0 | 15.1 | 9.1 | 4.0 |
| Antisocial personality disorder (≥18 years) ⁵ | NA | 20.4 | 22.2 | NA | 15.4 | 7.2 |
| Any Substance Use Disorder | 45.7 | 29.4 | 28.0 | 41.7 | 18.0 | 13.5 |
| Alcohol disorder | 19.9 | 15.6 | 17.1 | 20.0 | 7.8 | 6.0 |
| Drug disorder | 42.3 | 22.0 | 18.8 | 38.4 | 12.7 | 9.2 |

NA = Not applicable. — = Data not available.

Note: Descriptive statistics are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. The sample consisted of 1,172, 1,054, and 993 males and 657, 605, and 568 females at baseline, time 1, and time 2, respectively. Prevalence rates are for disorders assessed with impairment criteria except for hypomania, which has no impairment criteria for diagnosis.

¹ Assessed at baseline on participants who were interviewed after the DISC-IV posttraumatic stress disorder module became available (541 males).

² Not assessed at baseline.

³ Assessed for participants younger than age 18 (1,172 males at baseline, 350 males and 148 females at time 1, and 96 males and 21 females at time 2). The authors do not estimate prevalence rates for cells with fewer than 20 participants.

⁴ For participants younger than age 18, any disruptive behavior disorder is defined as having conduct disorder or oppositional defiant disorder. For participants age 18 and older, it is defined as having antisocial personality disorder.

⁵ Not applicable at baseline because the sample consisted only of juveniles. Assessed for participants age 18 and older at time 1 and time 2 (704 and 897 males, and 457 and 547 females, respectively).

Table 3. Prevalence of Disorder at Baseline, Time 1, and Time 2, by Race/Ethnicity in Males

| Disorder | African American (Percent) | | | Hispanic (Percent) | | | Non-Hispanic White (Percent) | | |
|--|----------------------------|--------|--------|--------------------|--------|--------|------------------------------|--------|--------|
| | Baseline | Time 1 | Time 2 | Baseline | Time 1 | Time 2 | Baseline | Time 1 | Time 2 |
| Any Disorder¹ | 59.7 | 49.6 | 44.3 | 65.6 | 56.6 | 49.8 | 79.4 | 64.3 | 63.9 |
| Any Disorder Except Behavioral¹ | 58.8 | 43.8 | 34.2 | 62.5 | 47.9 | 41.9 | 72.7 | 52.6 | 56.2 |
| Schizophrenia² | — | 0.0 | 0.0 | — | 0.9 | 0.4 | — | 0.6 | 0.7 |
| Any Mood Disorder | 15.4 | 15.3 | 9.0 | 18.9 | 13.5 | 7.5 | 12.3 | 11.3 | 7.3 |
| Any major mood disorder | 12.4 | 9.3 | 6.7 | 15.4 | 10.5 | 5.8 | 9.5 | 8.4 | 4.6 |
| Mania | 2.3 | 0.2 | 0.5 | 1.3 | 2.0 | 1.7 | 0.0 | 0.6 | 0.0 |
| Major depression | 10.5 | 9.1 | 6.7 | 14.6 | 9.2 | 5.8 | 9.5 | 7.6 | 4.6 |
| Hypomania | 1.9 | 6.9 | 2.1 | 3.4 | 4.3 | 2.0 | 1.0 | 3.3 | 3.3 |
| Dysthymia | 9.7 | 1.1 | 1.0 | 11.3 | 0.9 | 0.0 | 8.4 | 0.9 | 0.7 |
| Any Anxiety Disorder¹ | 9.1 | 8.7 | 8.0 | 18.6 | 16.1 | 6.8 | 9.8 | 7.8 | 6.0 |
| Generalized anxiety disorder | 3.7 | 2.7 | 2.2 | 5.0 | 2.4 | 0.5 | 2.0 | 1.7 | 0.8 |
| Panic disorder | 0.0 | 0.8 | 0.1 | 0.3 | 4.0 | 1.6 | 0.5 | 3.0 | 2.3 |
| Posttraumatic stress disorder ¹ | 6.2 | 6.7 | 5.6 | 16.0 | 13.1 | 5.6 | 7.0 | 3.8 | 2.6 |
| Attention-Deficit/Hyperactivity Disorder (<18 years)³ | 11.6 | 5.0 | 4.4 | 8.1 | 8.2 | 3.8 | 16.1 | 13.8 | — |
| Any Disruptive Behavior Disorder⁴ | 26.7 | 19.9 | 21.2 | 35.5 | 26.9 | 22.8 | 52.8 | 34.6 | 31.1 |
| Conduct disorder (<18 years) ³ | 20.6 | 15.3 | 8.2 | 33.3 | 43.7 | 18.4 | 51.6 | 32.8 | — |
| Oppositional defiant disorder (<18 years) ³ | 12.6 | 16.3 | 11.0 | 12.2 | 13.4 | 6.9 | 16.3 | 15.6 | — |
| Antisocial personality disorder (≥18 years) ⁵ | NA | 18.9 | 21.3 | NA | 22.4 | 22.9 | NA | 33.0 | 31.7 |
| Any Substance Use Disorder | 44.2 | 26.4 | 25.4 | 49.7 | 38.2 | 34.2 | 58.0 | 41.5 | 46.9 |
| Alcohol disorder | 19.8 | 14.5 | 15.7 | 20.2 | 17.9 | 19.9 | 23.2 | 25.3 | 27.9 |
| Drug disorder | 41.5 | 19.3 | 16.7 | 43.2 | 30.4 | 23.5 | 54.6 | 31.5 | 33.8 |

NA = Not applicable. — = Data not available.

Note: Descriptive statistics are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Because some participants were interviewed more often than others, the authors used a subset of interviews to summarize prevalence rates at baseline, time 1, and time 2. The sample consisted of 575 African American, 207 non-Hispanic white, and 387 Hispanic males at baseline; 526 African American, 184 non-Hispanic white, and 341 Hispanic males at time 1; and 505 African American, 171 non-Hispanic white, and 315 Hispanic males at time 2. Three males who identified as “other” race/ethnicity are excluded from the table. Prevalence rates are for disorders assessed with impairment criteria except for hypomania, which has no impairment criteria for diagnosis.

¹ Assessed at baseline on participants who were interviewed after the DISC-IV posttraumatic stress disorder module became available (251 African American, 107 non-Hispanic white, and 182 Hispanic males).

² Not assessed at baseline.

³ Assessed for participants younger than age 18 (575 African American, 207 non-Hispanic white, and 387 Hispanic males at baseline; 200 African American, 40 non-Hispanic white, and 108 Hispanic males at time 1; and 59 African American, 10 non-Hispanic white, and 27 Hispanic males at time 2). The authors do not present prevalence rates for cells with fewer than 20 participants.

⁴ For participants younger than age 18, any disruptive behavior disorder is defined as having conduct disorder or oppositional defiant disorder. For participants age 18 and older, it is defined as having antisocial personality disorder.

⁵ Assessed for participants age 18 and older at time 1 and time 2 (326 African American, 144 non-Hispanic white, and 233 Hispanic males at time 1; 446 African American, 161 non-Hispanic white, and 288 Hispanic males at time 2). Not applicable at baseline because the sample consisted only of juveniles.

Table 4. Prevalence of Disorder at Baseline, Time 1, and Time 2, by Race/Ethnicity in Females

| Disorder | African American (Percent) | | | Hispanic (Percent) | | | Non-Hispanic White (Percent) | | |
|--|----------------------------|--------|--------|--------------------|--------|--------|------------------------------|--------|--------|
| | Baseline | Time 1 | Time 2 | Baseline | Time 1 | Time 2 | Baseline | Time 1 | Time 2 |
| Any Disorder¹ | 60.5 | 38.6 | 27.8 | 73.8 | 49.0 | 35.0 | 73.7 | 54.0 | 34.8 |
| Any Disorder Except Behavioral¹ | 57.4 | 33.7 | 24.0 | 68.3 | 45.0 | 28.6 | 67.3 | 52.5 | 34.8 |
| Schizophrenia² | — | 0.3 | 0.0 | — | 0.0 | 0.0 | — | 0.0 | 0.0 |
| Any Mood Disorder | 20.4 | 17.2 | 11.9 | 24.2 | 18.3 | 14.6 | 23.4 | 16.9 | 10.7 |
| Any major mood disorder | 17.7 | 12.6 | 10.6 | 20.3 | 16.7 | 12.2 | 20.1 | 13.8 | 8.6 |
| Mania | 1.2 | 2.0 | 1.3 | 1.4 | 0.7 | 2.7 | 1.1 | 0.0 | 1.4 |
| Major depression | 16.7 | 12.0 | 10.6 | 19.7 | 16.5 | 11.2 | 19.0 | 13.8 | 8.4 |
| Hypomania ³ | 0.2 | 4.3 | 0.5 | 0.7 | 2.6 | 1.8 | 0.0 | 6.0 | 1.4 |
| Dysthymia | 11.3 | 1.8 | 0.5 | 15.8 | 0.8 | 0.9 | 17.9 | 1.3 | 1.5 |
| Any Anxiety Disorder¹ | 14.2 | 12.9 | 8.2 | 27.1 | 16.1 | 10.7 | 8.6 | 4.6 | 5.3 |
| Generalized anxiety disorder | 4.7 | 3.1 | 2.3 | 8.5 | 5.6 | 3.3 | 3.3 | 1.5 | 0.0 |
| Panic disorder | 0.7 | 2.2 | 0.6 | 2.1 | 4.6 | 2.2 | 1.1 | 0.0 | 1.8 |
| Posttraumatic stress disorder ¹ | 10.6 | 8.8 | 6.1 | 16.8 | 7.6 | 7.6 | 8.6 | 3.6 | 2.8 |
| Attention-Deficit/Hyperactivity Disorder (<18 years)³ | 15.8 | 9.7 | — | 20.5 | 3.7 | — | 16.6 | — | — |
| Any Disruptive Behavior Disorder⁴ | 27.7 | 14.3 | 5.8 | 44.9 | 19.2 | 14.5 | 54.4 | 13.8 | 8.7 |
| Conduct disorder (<18 years) ³ | 22.0 | 13.8 | — | 35.9 | 7.5 | — | 49.9 | — | — |
| Oppositional defiant disorder (<18 years) ³ | 13.7 | 10.1 | — | 21.0 | 6.0 | — | 17.8 | — | — |
| Antisocial personality disorder (≥18 years) ⁵ | NA | 12.0 | 6.0 | NA | 20.4 | 14.1 | NA | 11.6 | 7.2 |
| Any Substance Use Disorder | 36.3 | 12.9 | 12.1 | 45.8 | 20.5 | 14.8 | 59.6 | 35.8 | 23.7 |
| Alcohol disorder | 15.3 | 5.7 | 6.0 | 25.7 | 12.9 | 7.3 | 30.1 | 15.6 | 5.6 |
| Drug disorder | 33.0 | 8.9 | 6.8 | 41.7 | 11.7 | 13.9 | 56.7 | 25.6 | 20.9 |

NA = Not applicable. — = Data not available.

Note: Descriptive statistics are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Because some participants were interviewed more often than others, the authors used a subset of interviews to summarize prevalence rates at baseline, time 1, and time 2. The sample consisted of 430 African American, 89 non-Hispanic white, and 137 Hispanic females at baseline; 401 African American, 83 non-Hispanic white, and 120 Hispanic females at time 1; and 388 African American, 71 non-Hispanic white, and 108 Hispanic females at time 2. One female who identified as “other” race/ethnicity is excluded from the table. Prevalence rates are for disorders assessed with impairment criteria except for hypomania, which has no impairment criteria for diagnosis.

¹ Assessed at baseline on participants who were interviewed after the DISC-IV posttraumatic stress disorder module became available (249 African American, 48 non-Hispanic white, and 76 Hispanic females).

² Not assessed at baseline.

³ Assessed for participants younger than age 18 (430 African American, 89 non-Hispanic white, and 137 Hispanic females at baseline; 101 African American, 15 non-Hispanic white, and 32 Hispanic females at time 1; and 15 African American, 2 non-Hispanic white, and 4 Hispanic females at time 2). The authors do not estimate prevalence rates for cells with fewer than 20 participants.

⁴ For participants younger than age 18, any disruptive behavior disorder is defined as having conduct disorder or oppositional defiant disorder. For participants age 18 and older, it is defined as having antisocial personality disorder.

⁵ Assessed for participants age 18 and older at time 1 and time 2 (300 African American, 68 non-Hispanic white, and 88 Hispanic females at time 1; 373 African American, 69 non-Hispanic white, and 104 Hispanic females at time 2). Not applicable at baseline because the sample consisted only of juveniles.



Gender differences. Approximately one in five participants (regardless of gender) had a mood disorder that persisted to time 2. Substance use disorders were among the most persistent disorders for both males and females, but were significantly more likely to persist among males than females. The existence of any disruptive behavior disorder was also among the most persistent disorders in males and, at time 2, was significantly more likely to persist in males than in females.

Racial/ethnic differences. There were no significant racial/ethnic differences in the persistence of disorders among males; however, there were several significant differences among females. At time 1, any substance use disorder and its subcategory, alcohol use disorder, were more likely to persist among non-Hispanic whites and Hispanics than among African Americans. At time 2, drug use disorders were also more likely to persist among non-Hispanic whites than among African Americans.

among males. Figure 2 shows these differences over time. Three years after baseline, males were more likely to have a disruptive disorder; at 5 years, the disparity was even greater. Figure 2 shows that non-Hispanic whites had the highest rates of disruptive behavior disorder over time, followed by Hispanics.

Substance use disorders. Substance use disorders were the most prevalent disorders found in this juvenile population. The prevalence of substance use disorders generally decreased over time, but the rate of decrease depended on gender. Figure 2 illustrates gender and racial/ethnic differences over time. At baseline, compared with females, males had about one-third greater odds of having any substance use disorder and its subcategory, drug use disorder. Rates for alcohol use disorder were not significantly different. By the followup interviews, however, the disparities between males and females increased substantially because prevalence rates decreased faster for females than for males. Three years after baseline, compared with females, males were more likely to have a substance use disorder and its subcategories, drug use disorder and alcohol use disorder. Five years after baseline, the disparity was even larger, with males even more likely than females to have these disorders. Although the prevalence rates of most disorders decreased for males and females alike, 3 years after baseline, rates of alcohol use disorder were no longer decreasing among males.

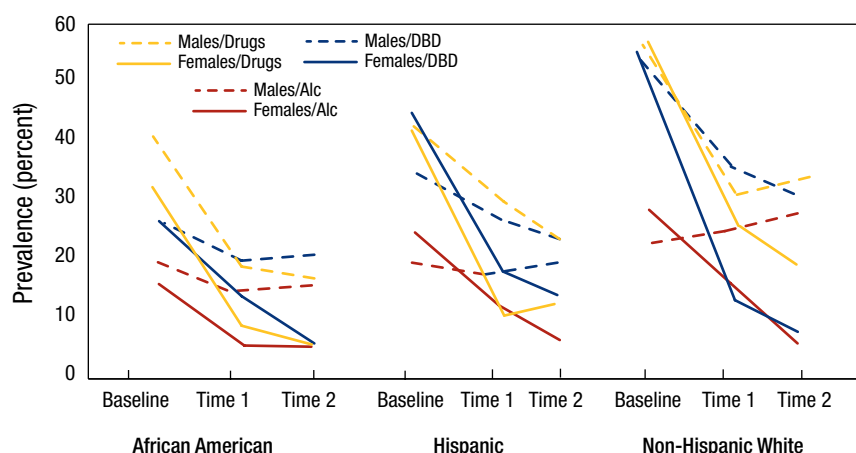
Even after adjusting for time spent in correctional facilities, substance use disorders were more common among non-Hispanic whites and Hispanics than among African Americans. Compared with African Americans, non-Hispanic whites were more likely to have a substance use disorder and its subcategories, drug use disorder and alcohol use disorder. Hispanics also were more likely than African Americans to have a substance use disorder.

Substance use disorders among participants living in the community at time 2. Because substance use is restricted in jails and prisons, the researchers examined rates of substance use disorders only among participants who had lived in the community the entire year before time 2 (345 males and 479 females). These prevalence rates, and the demographic differences, were substantially similar to those in the entire sample.

Persistence

To assess persistence of disorders in diagnosed youth, the authors examined the proportion that still had the disorder at time 1 or time 2 (see table 5). For most disorders, rates of persistence were higher at time 1 than at time 2.

Figure 2. Past-Year Prevalence of Substance Use and Disruptive Behavior Disorders



Alc = alcohol disorder, DBD = disruptive behavior disorder.

Table 5. Persistence of Disorders From Baseline to Time 1 and From Baseline to Time 2, by Gender

| Disorder | Males (Percent) | | | Females (Percent) | | |
|--|----------------------------------|--------------------|--------|----------------------------------|--------------------|--------|
| | Disorder Present at Baseline (n) | Percent Persisting | | Disorder Present at Baseline (n) | Percent Persisting | |
| | | Time 1 | Time 2 | | Time 1 | Time 2 |
| Any Disorder¹ | 335 | 52.1 | 48.7 | 233 | 54.0 | 34.9 |
| Any Mood Disorder | 163 | 28.0 | 18.9 | 144 | 30.4 | 20.9 |
| Any major mood disorder | 127 | 18.8 | 17.3 | 124 | 25.9 | 19.2 |
| Mania | 16 | * | * | 8 | * | * |
| Major depression | 116 | 20.0 | 15.7 | 118 | 25.3 | 17.9 |
| Hypomania | 16 | * | * | 2 | * | * |
| Dysthymia | 98 | 1.6 | 0.0 | 87 | 3.8 | 3.9 |
| Any Anxiety Disorder¹ | 50 | 6.3 | 14.8 | 58 | 19.3 | 17.3 |
| Generalized anxiety disorder | 34 | 18.8 | 0.0 | 35 | 9.4 | 10.4 |
| Panic disorder | 3 | * | * | 7 | * | * |
| Posttraumatic stress disorder ¹ | 37 | 5.8 | 4.0 | 42 | 4.5 | 5.4 |
| Any Disruptive Behavior Disorder | 388 | 36.6 | 31.1 | 230 | 30.7 | 10.5 |
| Any Substance Use Disorder | 517 | 38.0 | 34.3 | 266 | 30.5 | 18.2 |
| Alcohol disorder | 219 | 30.4 | 29.3 | 127 | 16.2 | 12.3 |
| Drug disorder | 482 | 28.4 | 23.1 | 246 | 22.6 | 13.6 |

*Rates of persistence are not presented for disorders with fewer than 20 cases at baseline.

Note: Rates of persistence are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Persistence is presented for disorders assessed with impairment criteria except for hypomania, which has no impairment criteria for diagnosis. The authors do not present rates of persistence for disorders specific to juveniles or adults (attention-deficit/hyperactivity disorder, conduct disorder, oppositional defiant disorder, or antisocial personality disorder).

¹ Assessed at baseline on participants who were interviewed after the DISC-IV posttraumatic stress disorder module became available (541 males and 374 females).

Discussion of Findings

Although the prevalence rates of most psychiatric disorders declined over time, a substantial proportion of delinquent youth continue to have disorders as they age. For some youth, detention may coincide with a period of crisis that subsequently abates. Many youth, however, continue to struggle: 5 years after detention, when participants were ages 14 to 24 years, nearly 50 percent of males and nearly 30 percent of females had one or more psychiatric disorders, with their associated impairments.

Substance use and disruptive behavior disorders continued to be the most common disorders. For many delinquent youth (especially males), externalizing disorders were not limited to adolescence. These disorders (such as conduct disorder and attention-deficit/hyperactivity disorder), which show up in the youth's outward behavior, often continue into adulthood. Five years after baseline, males had two to three times the odds of having substance use and disruptive behavior disorders compared with females, a disparity that increased for males over time. Males were also more likely than females to persist with substance use disorders and disruptive behavior disorder.

"Over time, females had higher rates of any mood disorder than males."

The observed gender differences in externalizing disorders are consistent with those in the general population, where males are as many as 10 times more likely than females to continue antisocial behavior from childhood into adulthood (Moffitt et al., 2002). Males may fare worse than females for a number of reasons. First, delinquent males are less likely to receive mental health and substance abuse services than females, which may exacerbate these differences (Teplin et al., 2005). Second, they may have fewer opportunities to assume age-appropriate social roles (e.g., jobs, postsecondary schooling)—all turning points that might reduce problem behaviors (Sampson and Laub, 1992). Third, males are incarcerated more frequently and for longer periods of time than females, thus decreasing the amount of time available for building a stable life (Massoglia and Uggen, 2010). Finally, early entry into adult social roles, such as parenthood, may be associated with worse outcomes for males than for females (Hope, Wilder, and Watt, 2003; Kreager, Matsueda, and Erosheva, 2010; Thornberry et al., 2000).

As in the general population, females had higher rates of internalizing disorders (e.g., depression, panic disorder) than males. The persistence of mood disorders (about 20 percent) was similar for both genders.

Rates of substance use disorders and disruptive behavior disorders were lower in African Americans than in non-Hispanic whites. These findings may reflect underlying racial/ethnic disparities in the legal system (Minton, 2011; Sickmund, Sladky, and Kang, 2014; West, 2010) and the different pathways by which non-Hispanic whites and racial/ethnic minorities enter the juvenile detention system. The researchers found racial/ethnic differences in substance use disorders even after taking into account that African Americans spend more time in correctional facilities, where access to alcohol and drugs is restricted (Sickmund, Sladky, and Kang, 2014).

These findings add to the growing debate about how the “war on drugs” has affected the disproportionate incarceration of African Americans. The study findings are consistent with the views of many researchers—that disproportionate minority confinement for drug offenses is due, in part, to disparate enforcement of drug laws in African American communities rather than higher rates of

drug use or dealing (Beckett, Nyrop, and Pflingst, 2006; Kakade et al., 2012; Moore and Elkavich, 2008).

Differences in the instruments used and in the sample’s demographics limit meaningful comparisons to most general population studies. The National Comorbidity Survey Replication (NCS–R) provides data that are most comparable to the time 2 interview. Although NCS–R used different (and often less stringent) criteria for impairment and did not assess the same disorders (e.g., antisocial personality disorder), it provides *DSM–IV* diagnoses for a sample of similar ages (18–24 years) (Harvard Medical School, 2005a, 2005b). The most marked discrepancies between the study findings and NCS–R were for drug use disorders, regardless of gender and race/ethnicity. For example, about 20 percent of males in the study had a drug use disorder, compared with about 7 percent in NCS–R; nearly 14 percent of Hispanic females and nearly 25 percent of Hispanic males had a drug use disorder, compared with less than 5 percent of Hispanics in NCS–R.

Changes in the prevalence of a disorder over time mirror those in the general population for most disorders. As summarized in the recent literature review by Costello, Copeland, and Angold (2011), many disorders in the general population decrease from adolescence to young adulthood except for panic disorders and substance use disorders, which increase (Jaffee et al., 2002; Kessler and Walters, 1998; Moffitt et al., 2007); findings on depression have been equivocal (Jaffee et al., 2002; Kessler and Walters, 1998; Moffitt et al., 2007). As mentioned previously, the youth studied here are most notably different from the general population regarding substance use disorders and the decreased rates over time. Perhaps substance abuse peaks earlier in delinquent youth, coinciding with the general course of delinquent behavior (Hirschi and Gottfredson, 1983; Moffitt,





1993). In contrast, youth in the general population may experience events that increase the likelihood of substance abuse as they age (Arnett, 2005; White and Jackson, 2004), including living in college dormitories, freedom from social controls, and delays in assuming adult responsibilities such as parenting—all events that delinquent youth are less likely to experience (Berzin and De Marco, 2010).

In terms of persistence, the most recent comparable investigation (Copeland et al., 2009) conducted in the United States using a sample of similar age and DSM-based criteria (albeit different measures) found lower rates of persistence of depression and disruptive behavior disorders than in the study sample. (Persistence of substance use disorders cannot be compared because the two studies' definitions of this disorder differed; Copeland and colleagues used more liberal criteria to identify impairment and included nicotine use.)

Study Limitations

The data reported in this bulletin are subject to the limitations of self-reporting. Moreover, it was not feasible to study more than one jurisdiction and the prevalence of psychiatric disorders may vary across jurisdictions (Fazel and Danesh, 2002; Fazel, Doll, and Långström, 2008; Wasserman et al., 2010), limiting whether and how much the results can be generalized to apply to other areas of the country. Researchers do not know if psychiatric disorders increase the likelihood of arrest and detention, or vice versa. Findings might have been marginally different if identical measures and time frames had been used at the baseline and followup interviews. Rates would likely have been higher if the juveniles' caretakers had been available for interviews at baseline (Teplin et al., 2002). When researchers conducted the followup interviews, it was not possible to interview many of the previous caretakers because the participants were older than age 17 or no

longer living with a caretaker. Although retention rates were high, participants who missed interviews might be more likely to have had disorders than those who were located and thereby interviewed. The study findings also do not take into account mental health services that these youth and young adults might have received. Despite these limitations, the findings have implications for future research and mental health policy.

Directions for Future Research

Retain incarcerated persons in longitudinal studies of psychiatric disorders. Most large-scale longitudinal studies of the general population (such as the National Epidemiologic Survey on Alcohol and Related Conditions (Bridget Grant, National Institute on Alcohol Abuse and Alcoholism, personal communication, August 13, 2010)) do not retain persons who become incarcerated by the time followup is conducted or they reinterview too few subjects to allow for a proper analysis (such as the Epidemiologic Catchment Area Study; William Eaton, Johns Hopkins University, personal communication, August 11, 2010). Thus, these samples are biased; they systematically exclude persons who, as this study suggests, are likely to have psychiatric disorders and poor outcomes. Excluding incarcerated persons will bias prevalence rates, especially for African American males. At any given time, nearly one in nine African American males ages 25 to 34 are incarcerated (West, 2010). To address health disparities, researchers must include the correctional population, which was estimated to be 1.5 million people in 2012 (Carson and Golinelli, 2013).

Add variables on incarceration history to general population studies. Although many studies examine the prevalence of psychiatric disorders in incarcerated populations, few focus on the effect of incarceration on psychiatric disorders. The researchers suggest that epidemiologic surveys of the general population include the following variables: number of incarcerations, age at time of incarceration, length of incarcerations, and experiences in community corrections (parole, probation, and community supervision). This strategy would generate information regarding how disproportionate confinement

“Disorders persist in a substantial proportion of delinquent youth.”

of racial/ethnic minorities affects health disparities in psychiatric disorders and the outcomes of these disorders.

Include females in longitudinal studies of delinquents.

Gender differences observed in the study underscore the fact that findings for males may not generalize to females. Yet, most longitudinal studies of delinquents exclude females or sample too few to analyze gender differences. Future studies must include females and collect data on pregnancy, childbirth, and childrearing. This will provide the requisite empirical foundation for improving gender-specific mental health services, which is especially important because females now make up an increasing proportion of juvenile arrests (29 percent) (Puzzanchera, 2013).

Examine variables that affect trajectories of disorder in high-risk youth. Few studies of high-risk youth examine the trajectories of disorders; still fewer examine how potentially modifiable risk and protective factors predict trajectories of disorder. Future studies should investigate how social, cognitive, and biological factors interact to affect these trajectories. For example, advances in neuroscience research provide unique opportunities for investigating how developmental differences in emotion regulation interact with “turning points” to alter these trajectories (Drabant et al., 2009; Feder, Nestler, and Charney, 2009; Wager et al., 2008).

Conclusion

Although prevalence rates of most psychiatric disorders decline as youth age, the study results show that disorders persist in a significant proportion of delinquent youth. To bolster youth’s chances of success upon reentry, the authors offer the following recommendations for mental health policy.

Focus on delinquent males. In recent years, innovative programs that the Office of Juvenile Justice and Delinquency Prevention has funded—such as the Girls Study Group (Zahn et al., 2008), GIRLS LINK (Schaffner, 2002), and Girl Scouts in Detention Centers—addressed the needs of delinquent females (Office of

Juvenile Justice and Delinquency Prevention, 1998, 2010; Sherman, 2005). The mental health system must now improve services for males, who account for 71 percent of juvenile arrests and 85 percent of youth in correctional facilities (Puzzanchera, 2013; Sickmund et al., 2013). The study findings demonstrate that interventions for substance use and disruptive behavior disorders are especially needed. Comprehensive interventions, such as functional family therapy (Gordon et al., 1988), multidimensional treatment foster care (Chamberlain, Leve, and DeGarmo, 2007), and multisystemic therapy (Henggeler et al., 2002) can be effective. Continued development and dissemination of these programs can further reduce illegal behaviors and provide cost-effective alternatives to incarceration (Aos et al., 2001).

Assess and treat substance use disorders in correctional facilities and after release. Regardless of gender or race/ethnicity, alcohol and drug use disorders were among the most common and persistent disorders; the need for services far exceeds their availability. Approximately one-half of youth in juvenile correctional facilities (Mulvey, Schubert, and Chung, 2007; Sedlak and McPherson, 2010) and approximately three-quarters of youth in adult jails and prisons who need substance abuse treatment do not receive it (Mulvey, Schubert, and Chung, 2007). Incarcerated adults fare much worse—a study published in the *Journal of the American Medical Association* concluded that 80 to 85 percent of adult prisoners who needed treatment for drug abuse did not receive it (Chandler, Fletcher, and Volkow, 2009). When individuals reenter their communities after release, services may be difficult to obtain. The Substance Abuse and Mental Health Services Administration reports, for example, that fewer than 10 percent of juveniles and adults with an alcohol use problem received specialty services in the past year (Office of Applied Studies, 2010).

Despite the promise of the Patient Protection and Affordable Care Act and the healthcare reform it will bring, the law may not improve mental health services for persons such as those who participated in this study, who may frequently cycle through correctional facilities (Congressional Budget Office, 2012). Incarceration

disrupts community treatment and Medicaid benefits (Freudenberg et al., 2008). Therefore, services must be improved both in correctional facilities and in the community, where the majority of detainees will eventually return.

For More Information

This bulletin was adapted from Teplin, L.A., Welty, L.J., Abram, K.M., Dulcan, M.K., and Washburn, J.J. 2012. Prevalence and persistence of psychiatric disorders in youth after detention: A prospective longitudinal study. *Archives of General Psychiatry* 69(10):1031–1043.

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OJJDP

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.

Perceived Barriers to Mental Health Services Among Detained Youth

Karen M. Abram, Leah D. Paskar, Jason J. Washburn, Linda A. Teplin, Naomi A. Zwecker, and Nicole M. Azores-Gococo

Highlights

This bulletin is part of a series that presents the results of the Northwestern Juvenile Project—a longitudinal study of youth detained at the Cook County Juvenile Temporary Detention Center in Chicago, IL. The authors examine youth's perceptions of barriers to mental health services, focusing on youth with alcohol, drug, and mental health disorders.

Findings include the following:

- Most frequently, youth did not receive services because they believed their problems would go away without outside help (56.5 percent).
- Nearly one-third of youth (31.7 percent) were not sure whom to contact or where to get help.
- Nearly one-fifth of the sample (19.1 percent) reported difficulty in obtaining help.
- African American and Hispanic detainees received significantly fewer services in the past compared with non-Hispanic white youth. Male detainees also received significantly fewer services in the past when compared with female detainees.





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Perceived Barriers to Mental Health Services Among Detained Youth

Karen M. Abram, Leah D. Paskar, Jason J. Washburn, Linda A. Teplin, Naomi A. Zwecker, and Nicole M. Azores-Gococo

More than 2 million youth are arrested each year (Snyder, 2005), and more than 61,000 juveniles were placed in custody on any given day in 2011 (Sickmund et al., 2013). Of the many youth involved in the juvenile justice system, most meet the criteria for psychiatric disorders that warrant mental health treatment (Teplin et al., 2002; Vermeiren, Jespers, and Moffit, 2006; Wasserman et al., 2002). Estimates indicate that nearly 70 percent of female detainees and 60 percent of male detainees have a psychiatric disorder other than a conduct disorder (Teplin et al., 2002) and that approximately half have two or more disorders (Abram et al., 2003). Rates of psychiatric

disorder among youth in the juvenile justice system are substantially higher than rates in the general population (Teplin et al., 2002).

Jails are required to provide a minimum of psychiatric care to inmates (American Association of Correctional Psychology, 2000), yet reports issued by the Surgeon General (U.S. Department of Health and Human Services, 2000) and The President's New Freedom Commission on Mental Health (2004) suggest that youth in custody are profoundly underserved.

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.

This bulletin describes the results of a study that examined youth's perceptions of barriers to mental health services. The authors interviewed 1,829 juveniles detained in Chicago to determine their need for, use of, and barriers to services.

Background

Although more than 70 percent of detention centers now screen for mental disorders (Goldstrom et al., 2000), research suggests that only 15.4 percent of detainees with major mental disorders receive treatment (Teplin et al., 2005). Males, older youth, and racial/ethnic minorities with major mental disorders are significantly less likely to receive treatment than females, younger detainees, and non-Hispanic whites with major mental disorders (Teplin et al., 2005).

Youth in the juvenile justice system have many of the characteristics associated with lower rates of service use: poverty and poor education (Buckner and Bassuk, 1997; Heflinger, Chatman, and Saunders, 2006; Pumariega et al., 1998), inadequate health insurance and ineligibility for Medicaid (Flores et al., 2002; Holl et al., 1995; Moffitt and Slade, 1997), racial/ethnic minority status (Heflinger, Chatman, and Saunders, 2006; McMiller and Weisz, 1996), a history of arrest (Rogers et al., 2001; Teplin et al., 2002), and a small social network (Harrison, McKay, and Bannon, 2004; McKay, McCadam, and Gonzales, 1996).

Although much is known about these external barriers to mental health service use, less is known about youth's perceived barriers and attitudes toward service use. How youth think about services helps determine whether they cooperate with referrals or remain in treatment. To date, three studies have examined perceived barriers to substance abuse treatment among detained youth (Johnson et al., 2001; Kim and Fendrich, 2002; Lopez, 2003). Kim and Fendrich (2002) and Lopez (2003) found that a youth's perceived need for treatment, regardless of his or her race or ethnicity, determined whether he or she sought services for substance abuse. Johnson and colleagues (2001) found that detainees who believed they could handle their own problems or that problems would simply go away had lower rates of service use. However, these studies only examined services for substance abuse. To the authors' knowledge, no study until this point had investigated perceived barriers to mental health service use among juvenile detainees. The study described in this bulletin was designed to address this omission in the literature. Because prior evidence suggests that perceptions of services may differ across sociodemographic groups, the study also examines gender and racial/ethnic differences

in perceived barriers (Diala et al., 2000, 2001; Gonzalez, Alegria, and Prihoda, 2005; Ojeda and Bergstresser, 2008).

Methods

This section provides a brief overview of the authors' methods. Additional, detailed information on the methodology can be found in Abram et al. (2003) and Teplin et al. (2002).

Participants and Sampling Procedures

Participants were part of the Northwestern Juvenile Project (NJP), 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), age (10–13 years, or older than 14 years), and legal status (processed as a juvenile or as an adult) to obtain enough participants to examine key subgroups (e.g., females, Hispanics, younger children).

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 one of the largest Hispanic populations in the United States. Studying this population is important because Hispanics are the largest minority group in the United States (U.S. Census Bureau, 2000, 2001).
- The detention center's size (daily census of approximately 650 youth, intake of 20 youth per day) ensured that a large enough pool of participants would be available.

Detainees were sampled for the study regardless of their psychiatric morbidity, state of drug or alcohol intoxication, or fitness to stand trial. Participants received a face-to-face structured interview in a private area. The interviews typically took place within 2 days of intake and lasted approximately 2 to 3 hours.

Measures

The authors identified youth's psychiatric diagnosis and measured their functional impairment to determine their need for mental health services. They used the Diagnostic Interview Schedule for Children, version 2.3 (DISC-2.3), based on the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised* (DSM-III-R; 1987) criteria, to measure alcohol, drug, and mental disorders (Bravo et al., 1993; Shaffer et al., 1996). These included affective disorders (major depression, dysthymia, mania, hypomania), anxiety disorders (panic, generalized anxiety, separation anxiety, obsessive-compulsive, overanxious), behavior disorders (conduct, attention-deficit/hyperactivity, oppositional), psychosis, and substance use disorders (alcohol, marijuana, and other substances). The authors then used the Children's Global Assessment Scale (Shaffer et al., 1983) to measure functional impairment. This instrument allows the interviewer to determine the lowest level of the interviewee's functioning at home, at school and/or work, and in other social environments. Scores range from 1 (most impaired) to 100 (healthiest). Scores of less than 61 indicate that children require services (Bird et al., 1990).

To assess service use and barriers to services, the authors used the Service Utilization and Risk Factors interview (Lahey et al., 1996). Interviewees were asked about services received for educational, behavioral, emotional, or substance use problems; types of services received (inpatient, outpatient, or residential); treatment providers; length of treatment; and their satisfaction with services.

The authors asked youth who were currently in treatment, or who had a history of using mental health services, why they stopped treatment or whether various factors made them think about stopping treatment. Of the youth who had been referred but had not received treatment, the authors asked why they had not gone for help. Of those who had never been referred nor received services, the authors asked which factors would impede them from getting help if they needed it. The specific barriers assessed were a belief that the problem would go away or could be solved on one's own, being unsure of the right person or place to get help, difficulty in obtaining help, concern about what others would think, and worry about cost. The authors also asked participants if there were "other" barriers beyond those specifically listed that they would like to volunteer. Barriers were not mutually exclusive; participants

Barriers to Nonschool Service Use Among Detainees With Alcohol, Drug, or Mental Disorders

| Barriers | Total (n = 1,216) | Males (Percent) | | | | Analysis Comparing Groups, p value |
|---|----------------------|---------------------------------|--|--|--|---|
| | | Total (n = 752) ¹ | Received Past Services (n = 403) | Referred, Never Received (n = 128) | Never Referred, Never Received (n = 202) | |
| Any barriers | 84.6 | 84.2 | 84.0 | 92.7 | 81.8 | 0.71 |
| Belief that problem would go away or could be solved on own | 56.5 | 56.3 | 64.1 | 46.8 | 52.4 | 0.07 |
| Unsure of the right person or place to get help | 31.7 | 31.0 | 24.4 | 47.5 | 34.9 | <0.05; referred > received |
| Too difficult to obtain help | 19.1 | 19.4 | 19.7 | 15.0 | 20.8 | 0.72 |
| Concern about what others would think | 16.4 | 16.3 | 10.0 | 12.4 | 28.4 | <0.01; never referred > received |
| Worry about cost | 13.2 | 13.3 | 6.4 | 10.0 | 23.7 | <0.001; never referred > received |
| Other ³ | 26.5 | 25.3 | 37.2 | 27.8 | 6.8 | <0.001; received; referred > never received |

Notes: Data are weighted to reflect the actual population of the Cook County Juvenile Temporary Detention Center. Alcohol, drug, and mental disorders include major depression, mania, dysthymia, hypomania, obsessive-compulsive disorder, overanxious disorder, generalized anxiety disorder, separation anxiety disorder, panic disorder, psychosis, alcohol use disorder, marijuana use disorder, other substance use disorder, attention-deficit/hyperactivity disorder, conduct disorder, and oppositional defiant disorder.

¹ Nineteen males did not receive all or part of the services section from the Service Utilization and Risk Factors interview; they were excluded from these analyses.

² Five female participants were missing data from the services section of the Service Utilization and Risk Factors interview and were excluded from these analyses.

³ Participants were asked if there were other barriers to services that were not already listed.

could choose more than one. The results are summarized below; for more detailed information, see the table.

Results

Among participants with any alcohol, drug, or mental disorder, most reported at least one barrier to services received outside school. Most commonly, youth believed that the problem would go away or that they could solve the problem without help. The second most common barrier was that youth were not sure who to contact or where to go for help. Nearly one-fifth of the sample reported difficulty obtaining help. The authors found no significant differences in these barriers in relation to race, ethnicity, or gender.

More than one-fourth (27 percent) of the sample with alcohol, drug, or mental disorders volunteered “other” barriers to services, most commonly, denial that the problem exists, disinterest in treatment, and dissatisfaction with their therapist or treatment. The prevalence of these “other” barriers varied by gender and race/ethnicity. Among all participating youth with a disorder, significantly more

males than females volunteered that they did not have a problem (31.8 percent versus 19.1 percent). Significantly more females than males volunteered that they were afraid of labeling or other negative consequences of treatment (17.3 percent versus 3.8 percent). Significantly more African American and Hispanic youth than non-Hispanic white youth volunteered that they did not have a problem (31.9 percent and 35.9 percent versus 11.7 percent). Finally, significantly more non-Hispanic white youth than Hispanic youth volunteered that they feared labeling or other consequences of treatment (7.7 percent versus 1.5 percent).

The authors then examined whether a history of service use influenced detainees’ perceptions of barriers to services if they had an alcohol, drug, or mental disorder. History of service use varied by gender and race/ethnicity. Significantly more females (70.0 percent) than males (49.1 percent) had received services outside school (e.g., medication, residential treatment, and professional outpatient services) before detention. Most non-Hispanic white males had received out-of-school services before detention (83.1 percent), in contrast to less than half of African American (48.4 percent) and Hispanic (40.0 percent) males. Among females, significantly more

Barriers to Nonschool Service Use Among Detainees With Alcohol, Drug, or Mental Disorders (continued)

| Barriers | Females (Percent) | | | | Analysis Comparing Groups, <i>p</i> value |
|---|---|---|--|--|--|
| | Total (<i>n</i> = 464) ² | Received Past Services (<i>n</i> = 329) | Referred, Never Received (<i>n</i> = 58) | Never Referred, Never Received (<i>n</i> = 72) | |
| Any barriers | 88.7 | 90.2 | 93.1 | 77.7 | <0.01; received; referred > never referred |
| Belief that problem would go away or could be solved on own | 59.3 | 64.4 | 60.2 | 39.3 | <0.01; received; referred > never referred |
| Unsure of the right person or place to get help | 40.4 | 40.8 | 41.7 | 37.5 | 0.86 |
| Too difficult to obtain help | 16.5 | 13.5 | 23.5 | 22.5 | 0.057 |
| Concern about what others would think | 17.8 | 17.2 | 9.2 | 26.0 | 0.054 |
| Worry about cost | 12.1 | 6.1 | 22.2 | 28.9 | <0.001; referred; never referred > received services |
| Other ³ | 39.5 | 48.3 | 26.8 | 11.0 | <0.001; received; referred > never referred; received > referred |



non-Hispanic whites received services outside school (87.0 percent) than African Americans (64.7 percent).

The table shows that significantly more females who had received services before detention, or who had been referred for services but had never received them, believed that their problems would go away than females who had never been referred nor received services. Compared with males who had received services, significantly more males who had never received services worried about the cost of services. Similarly, compared with females who had received services, significantly more females who had never received services or who had been referred but had not received services worried about the cost of services. Significantly more males who had never received services reported that they were concerned about what others might think of them receiving treatment compared with males who had received services. Significantly more males who had been referred but had never received services reported uncertainty about how to get help than males who had received services.

The authors also asked detainees with alcohol, drug, or mental disorders about their history of service use to examine the prevalence of other barriers to services. Among those who reported a barrier to treatment not listed in the survey, significantly more youth who had never received services before detention denied having a problem than those who had received past services (never referred, never received = 53.7 percent; referred, never received = 71.2 percent; received = 18.1 percent).

Discussion

Youth may decide not to seek services for mental health problems for many reasons. This study shows that most detained youth with alcohol, drug, or mental disorders report at least one perceived barrier to services. Most frequently, youth believe that problems will go away

without outside help. This is the most common barrier regardless of gender, race/ethnicity, or (among females) previous experience with mental health services. Similarly, youth in the general population who have self-identified mental health needs (Samargia, Saewyc, and Elliott, 2006) and youth receiving substance use services (Johnson et al., 2001) often believe that their problems do not require treatment. Parents of children with mental illness also frequently report this barrier (Flisher et al., 1997), which indicates the possibility of an intergenerational pathway for this belief.

Despite meeting the criteria for a mental disorder, many youth stated that they did not have a mental health problem. Detained youth who do not recognize their mental health problems or feel that they can solve such problems independently are unlikely to cooperate with referrals. Youth must first understand that they need mental health services before they will seek them out (Kim and Fendrich, 2002; Lopez, 2003) and stay in treatment (Ortega and Alegria, 2005).

The common barriers that juvenile detainees in this study reported may reflect perceptions about the state of the mental health service system in the United States. Most youth said they know how to access services; however, a substantial minority (about one-third) did not, and nearly one in five felt that it was too difficult to access services. National reports substantiate difficulties in accessing services (U.S. Department of Health and Human Services, 1999, 2000). Fragmented systems of care likely contribute to confusion about where to seek needed services (Goldstrom et al., 2000; U.S. Department of Health and Human Services, 1999). They are often not based on continuity of care or long-term needs (Goldstrom et al., 2000). Moreover, the separation of service sectors for mental health and substance use from general healthcare providers limits the sharing of patient information to coordinate care between providers and often results in multiple “handoffs” of patients for different services (Institute of Medicine, 2006).

African American and Hispanic detainees had received significantly fewer services in the past than non-Hispanic

“Detained youth who do not recognize their mental health problems or feel that they can solve such problems independently are unlikely to cooperate with referrals.”

white youth, which follows similar patterns in the general population and in public sectors of care (Angold et al., 2002; Cuffe et al., 2005; Garland et al., 2005; Hazen et al., 2004; Lopez-Williams et al., 2006). Male detainees also had received significantly fewer services in the past compared with female detainees.

Despite disparities in service use, detainees’ attitudes toward services were remarkably similar across gender and race. These findings suggest that individual perceptions and attitudes toward mental health services do not explain the disparities in service use. Instead, racial and ethnic disparities in service use may stem from external factors such as poverty, lack of sufficient minority service providers, and sociocultural barriers (U.S. Department of Health and Human Services, 2001). Disparities in service use between males and females may be due to greater help-seeking behaviors among females than among males (Garland and Zigler, 1994) and the higher likelihood that females will be referred to mental health services (Lopez-Williams et al., 2006).

Nearly three-fourths of youth had received services (including those received in school) before being detained. These rates are significantly higher among detained youth than among youth in the community (Kataoka, Zhang, and Wells, 2002; Leaf et al., 1996; Zahner and Daskalakis, 1997) and are comparable with rates of service use among youth in public service sectors (Garland et al., 2005; Hazen et al., 2004; Pumariega et al., 1999; Rosenblatt, Rosenblatt, and Biggs, 2000).

Moreover, youth who had never received services were more likely to be concerned about what others may think of them, uncertain about where to seek services, and unsure whether they could afford services than youth who had received services. These barriers are also common among untreated youth (Flisher et al., 1997) and adults (Wang, 2006) with mental health disorders in the general population. Youth who had received services in the past were more skeptical about using services in the future than those who had never received services. Youth who received services prior to detention were more likely than untreated youth to believe that problems would go away on their

own. To best understand how to successfully deliver treatment, service providers should examine how past experiences influence youth’s willingness to accept referrals to treatment.

Study Limitations

The study’s findings are drawn from a single site and therefore may pertain only to youth in urban detention centers with a similar demographic composition. In addition, service rates might differ if diagnoses were based on *DSM-IV* (American Psychiatric Association, 1994) instead of *DSM-III-R* (1987) criteria.

Because it was not feasible to interview caretakers, the study’s data are subject to the reliability and validity of the youth’s self-reporting. Although the self-reporting instrument used may have included services that official records (e.g., nonreimbursed, informal services) did not capture, the turmoil of a recent detention, memory loss, different rates of service use over time, or omissions (Burns, Angold, and Costello, 1992) may affect self-report of use.

The authors asked adolescents who had neither received nor been referred to services in the past to “imagine” perceived barriers if they did have a problem. This type of abstraction may not correspond to how the adolescent would behave if confronted with an actual problem. Also, the Service Utilization and Risk Factors interview only asks about five barriers to services. Many of the participants reported additional barriers to treatment.

Finally, the authors were not able to assess the quality or appropriateness of services, so this study could not determine whether past treatment was appropriate for participants’ needs.

Conclusion

Findings from the study highlight areas for future research and point out ways in which clinical services and educational outreach might be improved.

Future Research

The authors recommend three areas for future research:

- **Investigate the characteristics of mental health services that high-risk youth receive and why they are satisfied with these services.** Why does past service use predict poor attitudes toward treatment among high-risk youth? How do characteristics of services—length of treatment, type of treatment, caregiver characteristics—affect perceptions of services?
- **Investigate gender and racial/ethnic differences in service use.** Disparities in service use are well known; however, the mechanisms by which service use varies by gender or race/ethnicity are less clear. The present study suggests that disparities are unlikely to originate from differences in perceived barriers to service use among youth.
- **Study the role of social networks in youth's attitudes toward services.** As youth rarely are capable of seeking services on their own and may be resistant to seeking help (Boldero and Fallon, 1995; Samargia, Saewyc, and Elliott, 2006), researchers must work to understand the influence of social networks on service use. Social interactions may be the most important mechanism through which people recognize their problems and seek mental health services (Pescosolido, Gardner, and Lubell, 1998). Understanding how parents, extended family members, and other influential members of social networks facilitate or limit treatment-seeking behaviors will help service providers tailor outreach services to make them more acceptable to youth.

Implications for Clinical Services

The study's findings have implications for clinical services. First, mental health staff must engage youth in the referral process. Findings from this study highlight the importance of understanding youth's past experiences with mental health services before referring them to new services. These past experiences may contribute to youth's negative perceptions of future services and decrease their willingness to seek help in the future. Candid exploration of past experiences allows youth to express negative perceptions and choose service options that will maximize their likelihood of engaging in treatment.

Second, the mental health and juvenile justice systems must provide educational outreach. To close the gap between service need and service delivery, these systems must collaborate to educate high-risk youth and their families about the nature of mental health problems, the myths of such problems and the stigma they carry, and available treatment options. Furthermore, education can improve juvenile detainees' understanding of how to navigate the complex mental health system.

Despite the pervasive need for mental health services, findings from this study suggest that detained youth do not perceive the mental health system as an important or accessible resource. Improving service delivery to these high-risk youth must include finding ways to inspire their confidence.

For More Information

This bulletin was adapted from Abram, K.M., Paskar, L.D., Washburn, J.J., and Teplin, L.A. 2008. Perceived barriers to mental health services among youths in detention. *Journal of the American Academy of Child and Adolescent Psychiatry* 47(3):301–308.

Endnote

1. The racial/ethnic and gender disparities in perceived barriers were only among those youth who volunteered a barrier that was not listed in the survey; unfortunately, these disparities cannot be interpreted more broadly because not all participants were asked about these barriers.

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OJJDP

Working for Youth Justice and Safety

JUVENILE JUSTICE BULLETIN

September 2015

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.





SEPTEMBER 2015

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

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.

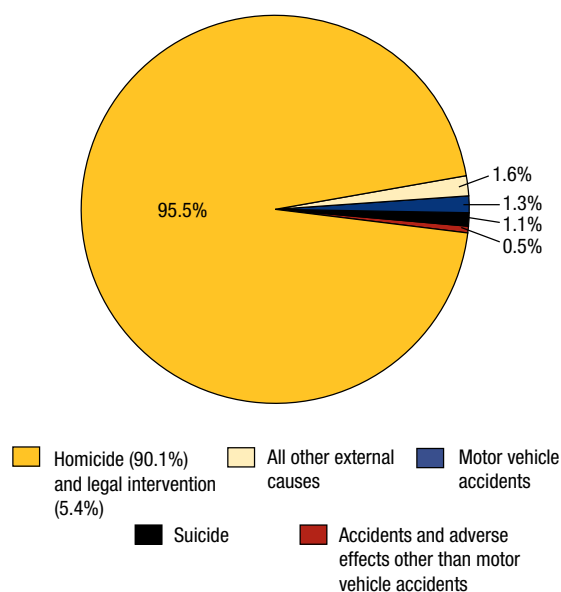
Table 2. Numbers of Deaths in the Sample of Delinquent Youth

| | 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 | 5.5 ^{NS} |
| Non-Hispanic white | 315 | 22 | 14.1 ^{NS} |
| Hispanic | 501 | 18 | 28.5‡ |

* Significant at $p < .001$

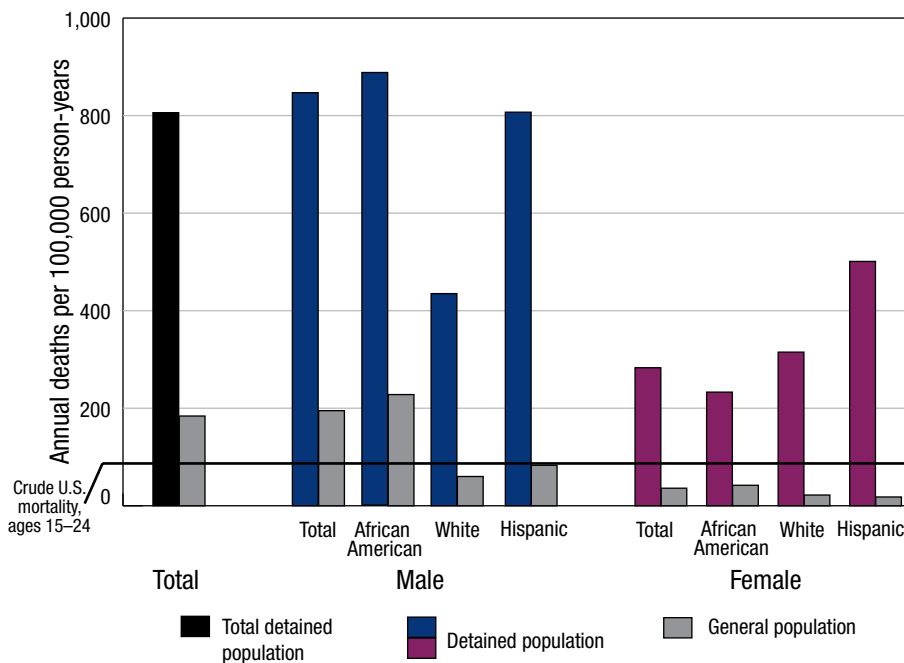
† Significant at $p < .01$

‡ 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 (Sabot, 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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