Original Investigation

Violent Reinjury and Mortality Among Youth Seeking Emergency Department Care for Assault-Related Injury
A 2-Year Prospective Cohort Study

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IMPORTANCE Violence is a leading cause of morbidity and mortality among youth, with more than 700 000 emergency department (ED) visits annually for assault-related injuries. The risk for violent reinjury among high-risk, assault-injured youth is poorly understood.

OBJECTIVE To compare recidivism for violent injury and mortality outcomes among drug-using, assault-injured youth (AI group) and drug-using, non–assault-injured control participants (non-AI group) presenting to an urban ED for care.

DESIGN, SETTING, AND PARTICIPANTS Participants were enrolled in a prospective cohort study from December 2, 2009, through September 30, 2011, at an urban level I ED and followed up for 24 months. We administered validated measures of violence and substance use and mental health diagnostic interviews and reviewed medical records at baseline and at each point of follow-up (6, 12, 18, and 24 months).

EXPOSURE Follow-up over 24 months.

MAIN OUTCOMES AND MEASURES Use of ED services for assault or mortality measured from medical record abstraction supplemented with self-report.

RESULTS We followed 349 AI and 250 non-AI youth for 24 months. Youth in the AI group had almost twice the risk for a violent injury requiring ED care within 2 years compared with the non-AI group (36.7% vs 22.4%; relative risk [RR], 1.65 [95% CI, 1.25-2.14]; $P < .001$). Two-year mortality was 0.8%. Poisson regression modeling identified female sex (RR, 1.30 [95% CI, 1.02-1.65]), assault-related injury (RR, 1.57 [95% CI, 1.19-2.04), diagnosis of a drug use disorder (RR, 1.29 [95% CI, 1.01-1.65]), and posttraumatic stress disorder (RR, 1.47 [95% CI, 1.09-1.97]) at the index visit as predictive of ED recidivism or death within 24 months. Parametric survival models demonstrated that assault-related injury ($P < .001$), diagnosis of posttraumatic stress disorder ($P = .008$), and diagnosis of a drug use disorder ($P = .03$) significantly shortened the expected waiting time until the first ED return visit for violence or death.

CONCLUSIONS AND RELEVANCE Violent injury is a reoccurring disease, with one-third of our AI group experiencing another violent injury requiring ED care within 2 years of the index visit, almost twice the rate of a non-AI comparison group. Secondary violence prevention measures addressing substance use and mental health needs are needed to decrease subsequent morbidity and mortality due to violence in the first 6 months after an assault injury.

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Youth violence is a leading cause of morbidity and mortality. Homicide is the second leading cause of death among youth overall and has been the leading cause of death among African American male adolescents and young men for more than a decade.[1] In addition, nonfatal assault-related injuries are responsible for more than 700 000 emergency department (ED) visits annually among youth (aged 10-24 years).[1] Annual societal costs for fatal youth violence injuries are substantial, estimated at more than $4 billion for acute medical care and $32 billion for lost wages and productivity.[2]

Published rates of violent injury recidivism vary widely from less than 1% to 44%.[3-10] Prior evaluations have examined recidivism among a broader combined population of assault-injured and unintentionally injured patients[4,7] or focused on a subpopulation of assault-injured youth, such as those with penetrating trauma[11] or those requiring hospital admission.[4,6,9] As a result, data are limited on the 84% of violently injured patients who are treated and discharged directly from the ED.[12] In addition, much of this body of research is now 10 to 20 years old, limiting its ability to inform current practice. The literature to date has also been primarily retrospective in nature, often using trauma registry data, and has lacked a true comparison group or diagnostic criteria for substance use or mental health.[3-5,9,13] Among the limited number of prior prospective studies, 2 examined recidivism among a combined assault-injured and unintentionally injured population,[7,10] 1 focused only on admitted adult trauma patients,[14] and 1 was a pilot study of assault-injured, ED-treated youth with a limited 8-week follow-up period.[8] The substantial methodological and population differences in existing studies account for our incomplete understanding of the current risk for violent injury recidivism among assault-injured youth treated in the ED and limit intervention development.

Furthermore, although substance use has been overwhelmingly associated with a history of violence,[15] none of the prior ED-based longitudinal studies have focused on a sample of drug-using youth seeking care for assault-related injuries. Among assault-injured youth treated in the ED, almost 55% have a history of recent substance use.[12] The relationship between substance use and youth violence is explained by theories of clustering of problem behaviors,[16] pharmacological effects of drug use,[17] and the violent nature of the illicit drug trade.[18]

The purpose of this study was to examine 2-year outcomes of fatal and nonfatal violent injuries among a sample of assault-injured, drug-using youth (AI group) (14-24 years of age) seeking ED care compared with non–assault-injured, drug-using youth (non-AI group) seeking ED care for other reasons. Based on prior work and theory, we hypothesized that the AI group would have higher rates of repeated violent injury requiring ED care compared with the non-AI group and that the probability of reinjury would be associated with baseline characteristics of substance use, mental illness, and carrying weapons.

Methods

Study Design

This prospective cohort study measured 2-year prevalence of violent injury and mortality among a consecutively obtained ED sample of assault-injured youth aged 14-24 years with a history of drug use in the past 6 months (AI group) compared with a group of non–assault-injured, drug-using youth proportionally sampled for age and sex (non-AI group). The study is part of the larger Flint Youth Injury Study.[12] The study was approved by the institutional review boards of the University of Michigan and Hurley Medical Center, and a Certificate of Confidentiality from the National Institutes of Health was obtained. Written assent or informed consent was obtained from participants or their parents if the participants were younger than 18 years.

Setting

The study was conducted at an urban public ED in Flint, Michigan, which is the only level I trauma center for the region. The center provides care for approximately 75 000 adult and 25 000 pediatric patients (younger than 20 years) annually (Flint population, 101 632). The rates of violent crime (2729/100 000) and poverty (39.7% below the federal poverty level)[19,20] in Flint are comparable to those of other urban centers, such as Detroit, Michigan; Camden, New Jersey; and Oakland, California. The study sample reflects the local population, which is 50% to 60% African American and is similar to those of prior studies conducted among patients at this site.[21]

Population

Patients aged 14 to 24 years presenting to the ED for an assault-related injury and a non-AI group proportionally balanced by sex and age (ie, aged 14-17, 18-20, and 21-24 years) who self-reported any drug use in the past 6 months (see the Measures subsection) on a computerized screening survey[12] were eligible for inclusion in the longitudinal study. Patients were excluded if they presented for acute sexual assault, child maltreatment (ie, injury caused by an adult caregiver), suicidal ideation/attempt, or conditions precluding ethical consent (eg, altered mental status, psychosis). Recruitment occurred 7 days per week, 21 h/d (5 AM to 2 AM) on Tuesday and Wednesday and 24 h/d from Thursday through Monday from December 2, 2009, through September 30, 2011. Assault-injured patients who were medically unstable were recruited on the inpatient unit if they stabilized within 72 hours.

Study Protocol

Assault-injured youth identified through electronic medical records were approached by trained research assistants (RAs) in waiting rooms or treatment spaces. *Assaults* were defined as any injury intentionally caused by another person and were assessed by the RA at the time of ED presentation. After providing assent or consent, patients self-administered a computerized screening survey[12] to assess their eligibility for the longitudinal study, specifically drug use in the past 6 months (see the Measures subsection). The non-AI group was enrolled systematically in parallel to the AI group to limit temporal or seasonal variation and was proportionally balanced by age and sex. For example, after identifying a 16-year old female with an acute assault-related injury and drug use in the past 6 months on the screening survey, the RA would recruit sequentially, by triage time, the next female aged 14 to 17 years seeking ED care for a medical complaint or an unintentional

injury; those with screen findings that were positive for any drug use in the past 6 months would be recruited for the longitudinal study. All screening and baseline surveys were administered privately; family or friends accompanying the patient were not allowed to observe or participate during administration.

Baseline and Follow-up Assessments

Eligible youth subsequently completed a baseline assessment approximately 90 minutes in duration in the ED, including a self-administered survey and an RA-structured diagnostic interview for which they received $20 in remuneration.[15] In-person follow-up assessments similar to the baseline survey were conducted at 6, 12, 18, and 24 months in the study ED or at a community location (eg, library, restaurant, or their homes). Participants were reimbursed $35 for the 6-month, $40 for the 12-month, $40 for the 18-month, and $50 for the 24-month follow-ups.

Measures

Demographic data were collected using validated measures (Drug Abuse Treatment Outcome Studies and National Longitudinal Study of Adolescent Health).[22,23] Use of substances, including alcohol, marijuana, and other illicit drugs (cocaine, inhalants, street opioids, methamphetamine, and hallucinogens) were assessed using the Alcohol Use Disorders Identification Test[24] and the National Institute on Drug Abuse–Modified Alcohol, Smoking and Substance Involvement Screening Test.[25,26] Binge drinking was defined as 5 or more drinks on a single occasion. The RA-administered Mini International Neuropsychiatric Interview (version 6.0; January 1, 2010) was used to assess drug use disorder (ie, abuse or dependence).[27] For analysis, substance use variables were dichotomized (yes or no).

Firearm carriage was measured by asking participants how often in the past 6 months they carried a gun.[28] Mental health disorders reflecting *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) diagnostic criteria, including a current major depressive episode (in the past 2 weeks) and posttraumatic stress disorder (PTSD) (in the past month but excluding the index assault), were assessed using the RA-administered Mini International Neuropsychiatric Interview and the version for children and adolescents.[27] Legal status was measured using a yes/no item (ie, on probation/parole) from the Addiction Severity Index.[29]

ED Baseline Visit and Recidivism

Data from review of the medical records for the index visit were abstracted from the ED medical record for all participants, including visit type (assault-related and non–assault related injury or medical) and disposition (admission or discharge) using a standardized abstraction form. The RAs categorized all assaults using standard E-code designations[30] and calculated Injury Severity Scores from the medical record data. Medical records were audited with an error rate of less than 5%.

Assault-related reinjury for which the participant sought ED care was examined as a composite measure that captured medical record data on ED visits at the study health system dur-

ing the 24-month follow-up and self-report data from each of the 6, 12, 18, and 24-month follow-up surveys (to capture visits that may occur out of the study ED). Recidivism was measured by the question, "How many of your ER [ED] visits in the past 6 months were related to injuries from a fight, assault, or conflict with another person?"[31] A prior study[21] found that 90% of this sample uses the study site hospital system exclusively for routine medical care. Out-of-hospital mortality was assessed through family members during attempted follow-up contact, local media, and regular review of national and local public health mortality records.

Statistical Analysis

We used χ^2 and unpaired t tests to evaluate bivariate associations with the outcome of interest (ie, 24-month use of ED services for assault-related reinjury). Kaplan-Meier (nonparametric) estimators of the survival function for the AI and non-AI groups were plotted with confidence bands. We used Poisson regression to estimate risk ratios for use of ED services for assault within 24 months associated with baseline ED visit characteristics.[32] Independent variables were chosen based on significance in the bivariate analysis (assault-related injury, diagnosis of PTSD or drug use disorder) and theory (race/ethnicity, use of public assistance). Parametric survival models estimated the effect of assault-related injury, diagnosis of PTSD, and diagnosis of a drug use disorder on the time until the first ED return for assault or death. This approach allowed interval-censored return times to be incorporated.

Results

Baseline Sample Characteristics

Overall, 599 youth were included in the sample (**Figure 1**), 349 in the AI and 250 in the non-AI groups. Participants were mostly male (58.8%) and African American (58.3%) and received public assistance (73.0%). We found no significant difference between the AI and non-AI groups in terms of sex, age, race, and receipt of public assistance (**Table 1**).[15] Most participants (226 [64.8%]) sustained an assault from a blunt mechanism (ie, struck by/against), firearm injury (70 [20.0%]; mean Injury Severity Score, 7.2), or cut/pierced wounds (53 [15.2%]; mean Injury Severity Score, 2.2). Among the non-AI participants, 61 (24.4%) presented for an unintentional injury, with remaining participants (189 [75.6%]) seeking acute medical care.
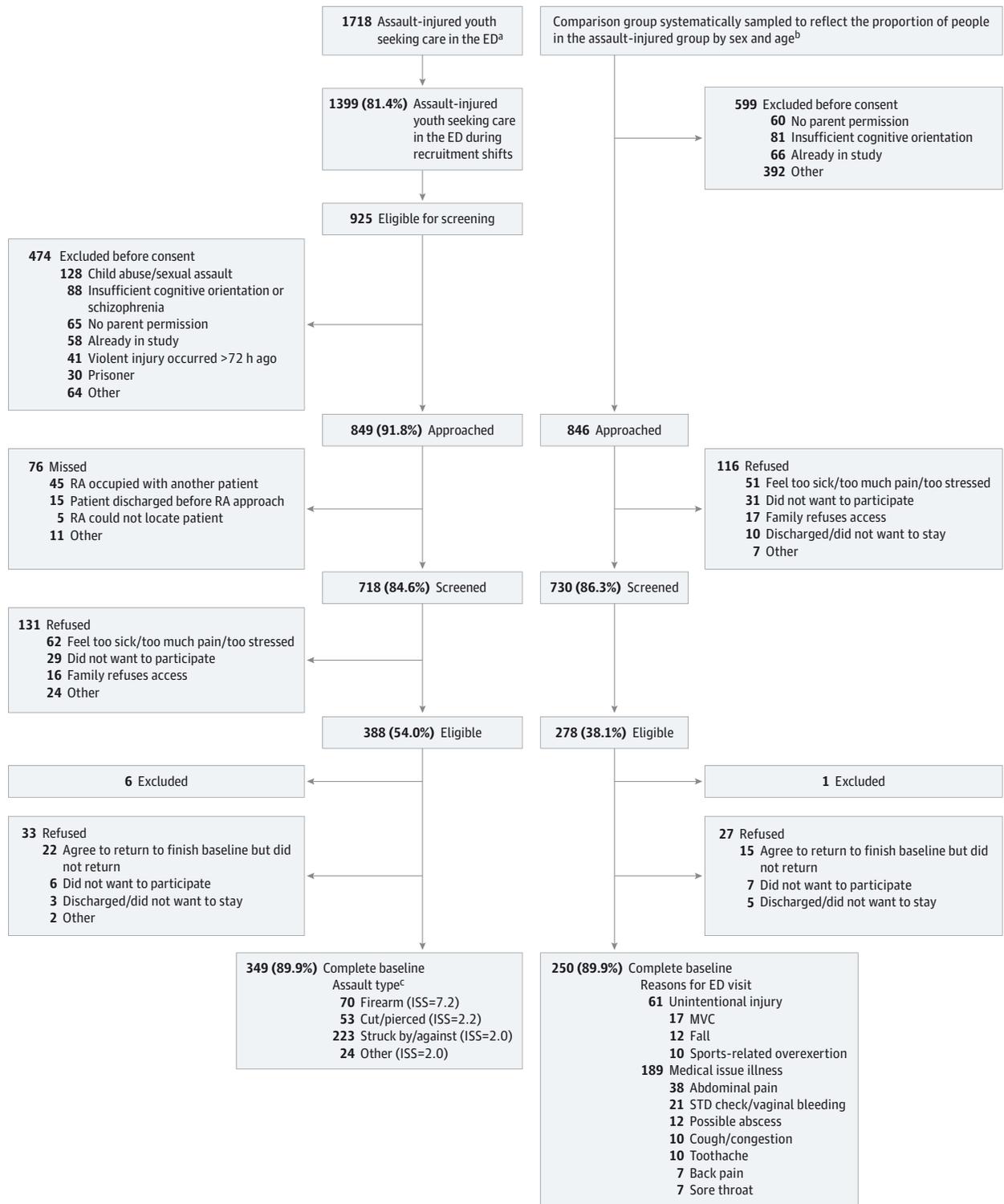
Follow-up Rates

The cohort was followed up for 24 months with completion rates of 85.3%, 83.7%, 84.2%, and 85.3% at 6, 12, 18, and 24 months, respectively. We found no significant differences in follow-up rates by group at any point.

24-Month Mortality and Use of ED Services for Violent Reinjury

Among the AI group, 36.7% returned for an assault-related reinjury compared with 22.4% in the non-AI group, and the

Figure 1. Study Flowchart

| 1718 Assault-injured youth seeking care in the ED[a] | Comparison group systematically sampled to reflect the proportion of people in the assault-injured group by sex and age[b] |

| 1399 (81.4%) Assault-injured youth seeking care in the ED during recruitment shifts | 599 Excluded before consent
  60 No parent permission
  81 Insufficient cognitive orientation
  66 Already in study
  392 Other |

925 Eligible for screening

474 Excluded before consent
   128 Child abuse/sexual assault
   88 Insufficient cognitive orientation or schizophrenia
   65 No parent permission
   58 Already in study
   41 Violent injury occurred >72 h ago
   30 Prisoner
   64 Other

| 849 (91.8%) Approached | 846 Approached |

76 Missed
   45 RA occupied with another patient
   15 Patient discharged before RA approach
   5 RA could not locate patient
   11 Other

116 Refused
   51 Feel too sick/too much pain/too stressed
   31 Did not want to participate
   17 Family refuses access
   10 Discharged/did not want to stay
   7 Other

| 718 (84.6%) Screened | 730 (86.3%) Screened |

131 Refused
   62 Feel too sick/too much pain/too stressed
   29 Did not want to participate
   16 Family refuses access
   24 Other

| 388 (54.0%) Eligible | 278 (38.1%) Eligible |

| 6 Excluded | 1 Excluded |

33 Refused
   22 Agree to return to finish baseline but did not return
   6 Did not want to participate
   3 Discharged/did not want to stay
   2 Other

27 Refused
   15 Agree to return to finish baseline but did not return
   7 Did not want to participate
   5 Discharged/did not want to stay

349 (89.9%) Complete baseline
   Assault type[c]
   70 Firearm (ISS=7.2)
   53 Cut/pierced (ISS=2.2)
   223 Struck by/against (ISS=2.0)
   24 Other (ISS=2.0)

250 (89.9%) Complete baseline
   Reasons for ED visit
   61 Unintentional injury
      17 MVC
      12 Fall
      10 Sports-related overexertion
   189 Medical issue illness
      38 Abdominal pain
      21 STD check/vaginal bleeding
      12 Possible abscess
      10 Cough/congestion
      10 Toothache
      7 Back pain
      7 Sore throat

Participants were enrolled from December 2, 2009, through September 30, 2011. ED indicates emergency department; ISS, Injury Severity Score; MVC, motor vehicle crash; RA, research assistant; and STD, sexually transmitted disease. Reasons for unintentional injury include the top three.

[a] Only 319 assault-injured patients (18.6%) sought ED care when an RA was not present.

[b] Described in the Methods section.

[c] May include more than 1 type of assault.

Table 1. Bivariate Comparison of Baseline ED Visit Characteristics for Those Participants With Subsequent Use of ED Services for Assault Within 24 Months of the Index ED Visit

Characteristic	ED Visit for Assault-Related Injury Within 24 mo[a] (184 [30.7%])	No ED Visit for Assault-Related Injury Within 24 mo[a] (415 [69.3%])	OR (95% CI)
Demographic			
Age, mean (SD), y	20.1 (2.4)	20.0 (2.4)	1.01 (0.94-1.09)
Female sex[b]	90 (48.9)	157 (37.8)	1.58 (1.11-2.24)
African American race	117 (63.6)	232 (55.9)	1.39 (0.97-1.98)
Married/cohabitating	54 (29.3)	116 (28.0)	1.07 (0.73-1.58)
Parent/self receives public assistance	144 (78.3)	293 (70.6)	1.50 (1.00-2.26)
Assault-related injury at baseline ED presentation[c]	128 (69.6)	221 (53.3)	2.01 (1.39-2.90)
Substance use in past 6 mo			
Marijuana use	178 (96.7)	405 (97.6)	0.73 (0.26-2.05)
Other illicit drug use	20 (10.9)	45 (10.8)	1.00 (0.57-1.75)
Binge alcohol consumption	77 (41.8)	168 (40.5)	1.06 (0.74-1.51)
Drug use disorder, abuse, or dependence[b]	116 (63.0)	226 (54.5)	1.43 (1.00-2.04)
Carry firearm	29 (15.8)	53 (12.8)	1.28 (0.78-2.09)
PTSD in past month[c]	30 (16.3)	31 (7.5)	2.42 (1.42-4.13)
Major depressive episode in past 2 wk	31 (16.8)	50 (12.0)	1.48 (0.91-2.41)
Currently on probation/parole	25 (13.6)	50 (12.0)	1.15 (0.69-1.92)

Abbreviations: ED, emergency department; OR, odds ratio; PTSD, posttraumatic stress disorder.

[a] Unless otherwise indicated, data are expressed as number (percentage) of patients.

[b] P < .05.

[c] P < .001.

AI group had almost twice the risk for an ED visit for assault within the 24-month follow-up period compared with the non-AI group (relative risk, 1.65 [95% CI, 1.25-2.14]; P < .001). Most of the youth (76.1%) who returned for an assault-related injury did so once, with a mean (SD) number of assault-related visits of 1.4 (1.0). The AI group had a greater total number of return visits for assault (P < .001), and the proportion who returned more than once was higher in the AI group (9.5% vs 4.4% in the non-AI group) (P = .02).

Most of the visits after the index visit occurred in the first 6 months (**Figure 2**). Firearm assault was the injury mechanism for 3.2% of the cohort with a post–index ED visit (mean Injury Severity Score, 8.5) (13 youth in the AI group vs 6 youth in the non-AI group). Of the subgroup of assault-injured youth who initially presented with a firearm injury (n = 70), 4 (6%) returned for a reinjury with a firearm. Overall mortality among the 599 participants was 0.8% (n = 5), with 3 deaths due to violence, 1 due to substance use overdose, and 1 due to a motor vehicle crash. Poisson regression (**Table 2**) modeling identified that an assault injury at the baseline visit, active PTSD symptoms at baseline (in the past month), drug use disorder (at baseline), and female sex predicted the use of ED services for assault within 24 months.

Parametric Survival Models

In the parametric survival model, assault-related injury (P < .001), diagnosis of PTSD (P = .008), and diagnosis of a drug use disorder (P = .03) significantly shortened the time until the first ED return visit for violence or until death (**Figure 3**). For example, the model estimates that participants without a diagnosis of PTSD or a drug use disorder in

Figure 2. Cumulative Frequency of Time to Return Emergency Department (ED) Visit or Death From an Assault-Related Injury
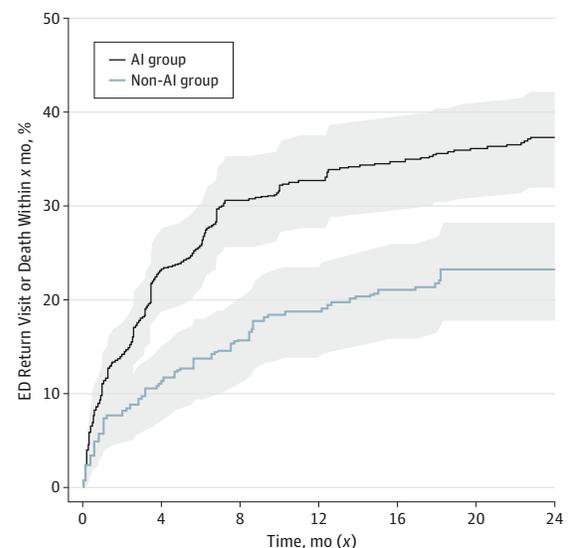
AI indicates assault injured. Gray area around curves indicates 95% pointwise CIs.

the non-AI group have an approximately 20% chance of returning to the ED within 48 months, whereas participants in the AI group without these diagnoses have a 40% chance of return visits. Further, the chance of a return ED visit for participants in the AI group with a diagnosis of PTSD and a drug use disorder was greater than 60%.

Table 2. Poisson Regression Variance Analysis of Baseline Visit Characteristics That Predict an Assault-Related Injury Visit Within 24 Months After an Index ED Visit for Assault or as Part of a Comparison Group Proportionally Balanced by Age and Sex

Baseline ED Visit Characteristic	RR (95% CI)
Age	1.01 (0.96-1.06)
Female sex	1.30 (1.02-1.65)[a]
African American race	1.27 (0.99-1.62)
Public assistance recipient	1.25 (0.93-1.68)
Assault-related injury	1.57 (1.19-2.04)[b]
PTSD	1.47 (1.09-1.97)[a]
Drug use disorder	1.29 (1.01-1.65)[a]

Abbreviations: ED, emergency department; PTSD, posttraumatic stress disorder; RR, relative risk.

[a] $P < .05$.

[b] $P < .01$.

Figure 3. Parametric Survival Model Estimating the Effect of Baseline Characteristics on the Expected Time Until First Emergency Department Return for Violent Injury
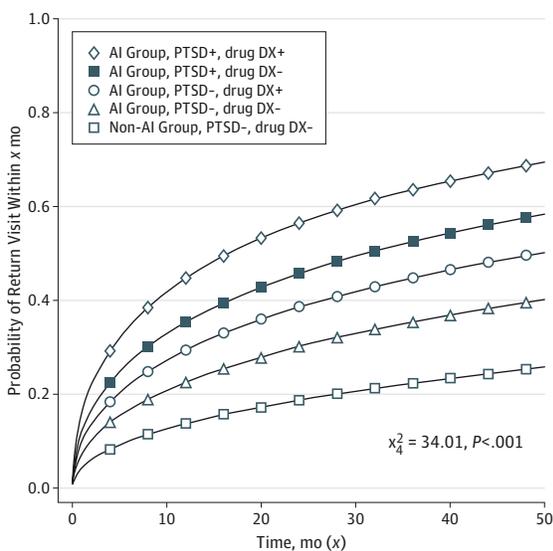
Characteristics include assault-related injury group, diagnosis of posttraumatic stress disorder (PTSD), and diagnosis of drug use disorder (drug DX). AI indicates assault-injured; plus sign, present; and minus sign, absent.

Discussion

The research literature includes a substantial body of work highlighting that youth violence is a complex but preventable public health problem with a wide range of risk and protective factors that can be addressed with evidence-based violence prevention programs.[33] These results indicate that youth treated in the ED for assault-related injury are at high risk for violent reinjury. Almost 37% of the AI group returned to the ED within 24 months for a violent injury, most within 6 months of the index visit. This risk is almost twice that for an ED assault-related visit observed among the non-AI group. The occur-

rence of reinjury identified in this sample is significantly higher than that in prior samples.[4,5,10] Although this study is, to our knowledge, the first prospective study to evaluate such a sample longitudinally from the ED with low attrition rates, our reinjury rates were comparable to those seen among prior retrospective samples of assault-injured youth from the mid-1990s. Although promising trends in reduction of exposure to violence have been shown in other arenas, this study suggests that little progress has been made in the arena of recurrent violent injury.[3,9]

The results have important implications for the further development and implementation of secondary violence prevention programs. Physician leaders, health system managers, and insurance/government payers are increasingly defining the standard of care for medical conditions to include a preventive care management plan that reduces recurrent costly ED visits (eg, asthma action plans, management of diabetes mellitus). Although such measures have been applied to chronic diseases, which have an overall ED recidivism rate of 26% in a national network study,[34] no comparable system of standard medical care currently exists for youth presenting with a violent injury. The monetary costs of these violent injuries are high, with 1 review estimating that acute care for firearm assault injuries alone cost the US health system $630 million in 2010, with 80% of this cost burden being carried by public insurance payers (eg, Medicaid) or uninsured or self-paying patients.[35] Given that violence remains the leading cause of death for urban youth in this age group, surpassing cancer, asthma, and human immunodeficiency virus infection, it may need to be managed with a comprehensive approach that addresses the acute care wounds and the long-term risk for reinjury and need for subsequent ED/hospital care.

These data also indicate that the initial 6 months after their ED evaluation for assault injury is the time of highest risk for a subsequent violent second injury requiring medical care. Prior research finds the immediate post-ED period to be a high-risk time for retaliatory violence,[8] which is also a key cause for youth fighting.[36] The survival model demonstrates that several modifiable and baseline conditions (PTSD, drug use disorders) substantially affected outcomes of repeated violence. Although the entire cohort had a history of drug use (most commonly marijuana use and often occasional use), a diagnosis of a drug use disorder at the index visit was predictive of future assault in the multivariate model. This finding reinforces the significant risk for recurrent injury among drug-using youth and the need to include substance use interventions within ongoing violence prevention programs. This study also confirms the importance of considering preexisting mental health needs while addressing violence prevention. Posttraumatic stress disorder was a significant predictor of future assault in the multivariate model, independently of acute reasons for the ED visit. Prior research[37] has suggested that PTSD symptoms may decrease normal defensive cues and thus increase the risk for violent victimization. Given that effective PTSD treatment exists,[38] incorporating this treatment as a component of violence prevention programs may be critical.

Race and receipt of public assistance were not predictive of future use of ED services for assault. The high levels

of public assistance observed among the sample likely reflect the high rates of poverty and unemployment seen in this urban center, and the lack of variance of this variable may account in part for the lack of significance of this measure of poverty. Furthermore, female participants constituted almost half of those who returned for an assault-related visit within 2 years. This finding, combined with recent data highlighting the increasing rates of violence among young women,[39] emphasizes the need to develop violence interventions relevant to both sexes.

We note several limitations of this study. This study was conducted at a single urban ED, potentially limiting generalizability. In addition, although our sample reflected the racial composition of the city where it was located, future studies are needed among youth samples composed of a broader range of races and ethnicities. Although a potential limitation, the use of self-reported survey data has been shown previously to have high reliability and validity among youth for self-reported risk behaviors, including drug and alcohol use.[40] Although the AI and non-AI groups[15] did not have significant differences in use of medical services (primary care physician visits in the past 6 months, routine physician examinations, and ED visits in the past year for any reason) and typically presented for minor self-limited injury or medical complaints (Figure 1),

participants in both groups may have had or developed medical illnesses that would alter their probability of being exposed to violence, which may have affected repeated ED visits for assault. Also, this study examined a cohort of drug-using youth, which limits our ability to generalize our findings to the 46% of assault-injured youth who do not report drug use in the past 6 months.[12] Finally, we attempted to capture all potential ED visits for assault-related injury during the follow-up period by combining objective review of medical records with self-reported data (strengthened by an 85% follow-up rate); however, use of ED services may be underreported.

Conclusions

This cohort study of assault-injured youth finds that more than one-third of high-risk, assault-injured youth experience a repeated violent injury requiring ED care, with 0.8% mortality, during a 2-year period. Future violence interventions for youth sustaining assault-related injury may be most effective in the first 6 months after injury, which is the period with the highest risk for recidivism. These interventions may be most helpful if they address substance use and PTSD to decrease future morbidity and mortality.

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