Suicide Trends Among Youths Aged 10 to 19 Years in the United States, 1996-2005

To the Editor: Following a decade of steady decline, the suicide rate among US youth younger than 20 years increased by 18% from 2003 to 2004, the largest single-year change in the pediatric suicide rate over the past 15 years.1 Federal health officials have urged caution in interpreting this 1-year apparent spike in youth suicide until data from additional years are available for comparison.1 We examined available national fatal injury data to assess whether the increase in suicide rates among US youth persisted from 2004 to 2005, the latest year for which data are available.

Methods. Data on deaths for which suicide (coded E950-E959 for International Classification of Diseases, Ninth Revision [ICD-9] [1996-1998] and X60-X84, Y87.0, and U03 for ICD-10 [1999-2005]) was listed as the underlying cause of death among 10- to-19-year-olds were obtained from the National Vital Statistics Systems using WISQARS (Web-based Injury Statistics Query and Reporting System; National Center for Injury Prevention and Control, Atlanta, Georgia). There is excellent agreement between classification of suicide deaths in ICD-9 and ICD-10 (comparability ratio=1.002).2 The 10- to 19-year age group was selected to facilitate comparison with previous research;1 the 1996-2005 time period was selected to provide a relatively recent context for evaluating single-year changes in suicide rates in 2004 and 2005. Information was extracted regarding number of suicide deaths per year, age, and sex.

Rates of suicide per 100,000 persons were calculated with the use of population estimates obtained from WISQARS. The trend in suicide rates from 1996-2003 was estimated using log-linear regression. There was no evidence of serial correlation, overdispersion, or nonconstant variance in the fitted model. Using the 1996-2003 trend line, we estimated the expected suicide rates in 2004 and 2005 and calculated 95% prediction intervals (PIs) for each year. We then calculated total excess suicide deaths in 2004 and 2005 by taking the difference between the observed number of deaths and the expected number of deaths estimated from the 1996-2003 trend. Analyses were performed using R statistical software version 2.6.0 (R Foundation for Statistical Computing, Vienna, Austria).

Results. Although the overall observed rate of suicide among youth aged 10 to 19 years decreased by 5.3% between 2004 and 2005 (4.74 to 4.49 per 100,000), both the 2004 and 2005 rates were still significantly greater than the expected rates based on the 1996-2003 trend (2004 95% PI, 3.64-4.30; 2005 95% PI, 3.47-4.15). This same pattern of significance was also found for males and females separately (Figure 1) and in the 10- to 17-year and 18- to 19-year age groups (Figure 2). In absolute numbers, in 2004 there were an estimated 326 excess suicide deaths among youth aged 10 to 19 years (167 females, 159 males) compared with the number of deaths predicted by the regression model. In 2005, the overall number of excess suicide deaths was 292 (105 females, 187 males).

Comment. The significant excess mortality due to youth suicide in 2004 and 2005 suggests that the marked increase in suicide rates from 2003 to 2004 was not a single-
year anomaly.\(^1\) Attention must now be directed toward understanding whether this increase in the youth suicide rate after a decade-long decline reflects an emerging public health crisis.

Studies to identify causal agents are important next steps. These studies should involve comprehensive assessment of individual-level exposure and outcome data, as aggregate data alone cannot establish causal links. Possible factors to consider include changes in the prevalence of known risk factors (eg, alcohol use, access to firearms),\(^3\) the influence of Internet social networks,\(^4\) higher rates of untreated depression in the wake of recent boxed warnings on antidepressants,\(^5\) and increases in suicide among US troops, some being older adolescents.\(^6\)

Whatever the explanation, the need for effective interventions to reduce pediatric suicides must be addressed nationally.

Jeffrey A. Bridge, PhD
jeff.bridge@nationwidechildrens.org
The Research Institute at Nationwide Children’s Hospital
Columbus, Ohio

Joel B. Greenhouse, PhD
Department of Statistics
Carnegie Mellon University
Pittsburgh, Pennsylvania

Arielle H. Weldon, MS
John V. Campo, MD
Kelly J. Kelleher, MD, MPH
The Research Institute at Nationwide Children’s Hospital
Columbus, Ohio

Access to Data: Dr Bridge had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Bridge, Greenhouse, Kelleher.

Acquisition of data: Bridge, Weldon.

Analysis and interpretation of data: Bridge, Greenhouse, Weldon, Campo, Kelleher.

Drafting of the manuscript: Bridge, Greenhouse.

Critical revision of the manuscript for important intellectual content: Bridge, Greenhouse, Weldon, Campo, Kelleher.

Statistical analysis: Bridge, Greenhouse.

Obtained funding: Bridge, Greenhouse, Kelleher.

Administrative, technical, or material support: Bridge, Weldon.

Study supervision: Bridge, Greenhouse, Kelleher.

Financial Disclosures: Dr Bridge reported that from 2001 to 2004, he participated as a coinvestigator of an open-label trial of citalopram for treatment of pediatric recurrent abdominal pain. The study was funded by an investigator-initiated grant from Forest Laboratories (John Campo, MD, Principal Investigator). Dr Bridge reported having received no financial support from Forest Laboratories or from Dr Campo for his participation; salary support to Dr Bridge was provided by the National Institute of Mental Health grants MH55123 and subsequently MH62371 (Advanced Center for Interventions and Services Research for Early-Onset Mood and Anxiety Disorder, David Brent, MD, Principal Investigator). Dr Campo reported having received past grant support from Forest Laboratories and having served as a consultant to Eli Lilly. No other financial disclosures were reported.

Funding/Support: Dr Bridge was supported by grant K01-MH069948 from the National Institute of Mental Health, National Institutes of Health. Drs Greenhouse and Kelleher were supported by grant SR01-MH078629-02 and Dr Campo by grant R01 MH069715-04 from the National Institute of Mental Health, National Institutes of Health.

Role of the Sponsor: The National Institute of Mental Health had no role in the design and conduct of the study; in the collection, analysis, and interpretation of the data; or in the preparation, review, or approval of the manuscript.