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

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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. 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. 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). The 10- to 19-year age group was selected to facilitate comparison with previous research; 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 change.
The rate of suicide for 10- to 17-year-olds decreased by only 1.3% between 2004 and 2005 (3.06 to 3.02 per 100,000), and both 2004 and 2005 rates were significantly greater than the expected rates (2004 95% prediction interval [PI], 2.32-2.95; 2005 95% PI, 2.19-2.83). For 18- to 19-year-olds, the suicide rate decreased by 9.4% between 2004 and 2005 (11.55 to 10.46 per 100,000), but rates of suicide in 2004 and 2005 were still significantly greater than predicted by the 1996-2003 trend (2004 95% PI, 8.49-10.34; 2005 95% PI, 8.16-10.08). Y-axis intervals shown in blue indicate range from 0 to 5.