ICRC-S Injury Control Research Center for Suicide Prevention

Public Health Surveillance of Youth Suicide Attempts: Challenges and Opportunities

By: Michael Singleton and Laura Frey

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Accurate collection of data on youth suicide attempts presents considerable challenges for public health practitioners and researchers. This data collection challenge has been borne out recently in the state of Kentucky where preliminary analyses of several systems indicate a large discrepancy between the number of high school student self-reports of injurious suicide attempts and the number of self-injury encounters at hospital emergency departments.

Stigma surrounding suicide and mental illness may discourage persons who attempt suicide from disclosing the attempt in certain settings. Moreover, there is a need to distinguish between a suicide attempt and nonsuicidal self-injury (NSSI). There are instruments, such as the University of Washington's Suicide Attempt Self-Injury Interview, designed for this purpose. However, their application in certain settings, such as a busy emergency department or within the context of a longer survey covering a wide range of topics, may be impractical.

Within the past 25 years, a number of U.S. surveys have incorporated questions about suicide attempts. Beginning in 1991, suicide questions were added to the CDC's Youth Risk Behavior Surveillance System (YRBSS), a biennial survey of middle school and high students nationwide. In 2008, suicide questions were added to the National Survey on Drug Use and Health (NSDUH), an annual household survey of persons ages 18 and older. As with all surveys, the validity of YRBSS and NSDUH data relies on the respondents to interpret and answer the questions in the same way the survey designers intended and to disclose their behavior honestly.

Miller et al. recently compared YRBSS and NSDUH results between 2008 and 2012 and found the two surveys yielded significantly different estimates of injurious suicide attempts (i.e. a suicide attempt that resulted in an injury that required medical treatment) among high school students ages 18 or older. In particular, YRBSS estimates were significantly higher than NSDUH estimates. The authors suggested a number of factors that might contribute to this disparity, including different survey environments (school versus home), and differences in the nature of parental consent and parental involvement in the process.

Moreover, anonymized hospital and emergency department administrative billing records are used in many states to provide data on patient encounters involving an intentional self-injury, based on external cause of injury codes (E-codes) defined within the International Classification of Diseases (ICD). Several authors have reported on the limitations of this approach. Haerian et al. demonstrated that accuracy of suicide attempt case identification could be improved by combining this approach with natural language processing of textual information in electronic health records (EHR). However, at present it is not clear how this method could be scaled up for routine, population-based public health surveillance. Also, it is widely understood that medical coding of billing records can be influenced by considerations about reimbursement. Furthermore, patients may choose not to disclose a self-inflicted injury or suicide attempt to medical professionals, although to our knowledge there has been little previous research on disclosure of suicidal behavior in medical settings. For these reasons and others, billing records and EHRs are at best imperfect proxies for NSSI and suicide attempts requiring medical treatment.

To assess the strengths and limitations of commonly used sources of surveillance data on suicidal behavior in youth, we are analyzing and triangulating data from several systems for the state of Kentucky. We are examining YRBSS survey data for suicide attempts resulting in medical treatment among Kentucky high school students, and comparing the results with counts of hospital and emergency department visits for intentional self-injury among high school-aged patients based on billing records, poison center calls, and emergency medical services patient encounters. Preliminary analyses indicate a large discrepancy between the number of injurious suicide attempts reported by Kentucky high school students and the number of self-injury encounters at Kentucky EDs, hospitals based on administrative billing records. In a future ICRC-S blog post, we will share more about our findings and discuss their implications, highlighting opportunities for further validation and improvement of public health surveillance data on youth suicide attempts.

Authors Michael Singleton and Laura Frey both attended the ICRC-S Research Training Institute in 2016.

Michael Singleton, PhD
University of Kentucky College of Public Health
Assistant Professor, Department of Biostatistics
Injury Epidemiologist, Kentucky Injury Prevention and Research Center

Laura M. Frey, PhD, LMFT
University of Louisville Kent School of Social Work
Assistant Professor, Couple & Family Therapy Program

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