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Suicide Prevention in Primary Care Medicine

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Suicide is the 10th leading cause of death in the United States. In adults younger than 55 years, suicide is among the 5 most common causes of death.[1] During the past 50 years, US suicide rates have not declined.[2] In fact, between 1999 and 2010, suicide rates increased significantly, especially in men 50 to 59 years of age.[1] Evidence, albeit limited, suggests that many suicide decedents had contact with a health care provider shortly before death.[3] The report by Chock et al[4] in the current issue of *Mayo Clinic Proceedings* highlights an important opportunity to expand suicide prevention in primary medical care settings and the potential for primary health care providers to take a larger role in suicide prevention.[5]

Unlike most other studies examining the link between health care visits and suicide, Chock et al[4] used a control group to ascertain whether the pattern of health care use in suicide decedents was, or was not, different from that in nonsuicide patients. In addition, Chock et al[4] used electronic health record (EHR) data to assess health care visits, a rather innovative information-gathering approach in suicide research. Previous research found that 70% or more of elderly patients who died by suicide saw their primary care physician within a month before death.[6] Most patients with psychological problems receive care solely in primary care settings, and in 2008, Kessler and Stafford[7] noted that "primary care is the de facto mental health system." Chock et al[4] found that patients who died by suicide had recent health care visits, but this was the case in the control group as well.

Although primary care is the sole source of medical care for many patients with mental health conditions, few patients exhibit suicidal risk factors during primary care visits.[7] Most patients who visit their primary care provider for psychosomatic reasons report physical health concerns that require evaluation, which can result in mental health issues going unrecognized.[7] The evidence regarding health care use before suicide is mainly based on medical record review of the decedents or retrospective psychological autopsy.[3] Little is known about whether primary care use is higher in patients who die by suicide compared with patients who do not. The novel way in which Chock et al[4] used EHR data expands our knowledge in this area.

The use of EHRs in health care settings has risen dramatically since passage of the Health Information Technology for Economic and Clinical Health Act in 2009, which authorized incentive payments through the Centers for Medicare and Medicaid Services to promote meaningful use of EHRs.[8] As EHR use increases, EHR data will become more relevant to track and enhance health care services, and these efforts will continue to improve the quality and completeness of EHR data used for research.[9-12] Data from EHRs provide rich information regarding a patient's health care utilization, diagnoses, and treatments; many EHRs also capture data about insurance status and other sociodemographic characteristics. When used in research, EHR data can help overcome recall bias and other limitations of self-reported information (or proxy-derived data for decedents) regarding patients' health care use, medications, and other aspects of their medical history. During real-time delivery of clinical care, many EHRs can be enhanced to include clinical decision support tools and can use patients' clinical records and provide recommendations for best health care practices. Such tools have been developed to improve clinical decision making regarding diabetes treatment, asthma care, and

guideline-based medication prescribing, for example.

To date, only a few suicide-related studies have used EHR data, and most investigated suicide attempts rather than mortality.[13-15] In contrast, Ahmedani et al[15] used EHR data to evaluate health care use in a large number of suicide decedents and discovered that most suicide decedents (83%) used health care services in the year before death. However, this study did not have a control group to identify whether the pattern of use in suicide decedents would be different from that in patients who did not attempt suicide. The study by Chock et al[4] helps resolve this limitation by introducing a comparison group. Using data from more than 500,000 patients who had contact with a health care provider at Mayo Clinic or Olmsted Medical Center, they identified 86 suicides. They then randomly selected, from the same patient population, 258 controls matched on birth date and sex. Comparing the frequency and type of health services received, Chock et al found no difference between the control group and suicide decedents in the likelihood of having a health care visit in the year before death, deemphasizing the importance of health care visits before death as a potential corollary for suicide. However, Chock et al did find an increase in the use of health care services before death in the subset of patients with a known mental health diagnosis.

This research by Chock et al[4] supports observations made by Gaynes et al[16] that primary care providers could potentially prevent suicide in patients with known risk factors, such as mental health problems and substance dependence. But even in patients with depression who see a primary care provider, most will not attempt suicide. Thus, there is a need for more evidence to help providers understand the complex risk profile and behavior of suicidal patients. Furthermore, detrimental life events can be a short-term trigger for suicide[17] in patients without a known mental health diagnosis, and these trigger events are difficult, if not impossible, for primary care providers to identify. In addition, negative life events that precipitate suicide affect certain populations differently, by age, sex, socioeconomic position, or other characteristics.[18] Physical illness, for example, is an important suicide risk factor,[19] especially in elderly men.[20] Intimate partner problems are a risk factor in young military veterans before suicide death.[21] Socioeconomic problems, such as financial difficulties and unemployment, are associated with suicide in women.[18] Previous studies that identified life stressors more likely to increase suicide risk have not assessed health care utilization before death, so it is difficult to link specific life situations with a pattern of use that would provide clues to a primary care provider. Chock et al showed the benefit of using EHR data in understanding patterns of use, but their data did not include information on the circumstances preceding death.

Linking EHR data with public health surveillance data, such as the National Violent Death Reporting System (NVDRS), could fill this void and better inform prevention strategies in primary care settings. The NVDRS is a unique state-based surveillance system developed by the US Centers for Disease Control and Prevention. It links information from death certificates, medical examiner/coroner reports, law enforcement reports, and crime laboratory data, providing a more comprehensive evaluation of the circumstances surrounding violent death, including suicide. Previous linkages between NVDRS and health care utilization data can serve as examples for how to create broader linkages with this important data source. For example, South Carolina, which is one of the states currently participating in the NVDRS, successfully linked its violent death data to other administrative health care utilization data sources, including those associated with hospital inpatients and emergency departments.[22] In a report using the South Carolina data, Weis et al[22] linked nearly 60% of the suicide decedents to hospital discharge data. These data showed that 16% of suicide decedents had a hospital encounter 30 days before death. Further linkages between EHR and NVDRS data from suicide decedents could provide a tremendous new source of information to help health care providers identify at-risk patients. As these novel data linkages increase predictive capabilities, there may be the potential to design EHR-based clinical decision support tools to help providers identify individuals with the highest suicide risk and prompt action. For example, although not implemented as an EHR tool, the Department of Veteran Affairs and the Department of Defense have developed a clinical practice guideline for assessing and managing patients at risk for suicide. An EHR clinical

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decision support tool could be modeled after these Department of Veteran Affairs/Department of Defense guidelines. This tool would assess the risk of suicide based on the patient's health records and demographic characteristics and would alert providers of patients reaching the at-risk threshold. Providers could then consult an EHR suicide module, which would guide them in further assessing the risk of suicide, determining appropriate care settings, and identifying treatment options.

Chock et al[4] advance the field of suicide research in 2 ways. First, they provide important insight into patient health care use before death relative to nonsuicide patients. Second, they demonstrate the usefulness of EHR data in broadening our understanding of the suicide phenomenon and inspire future research that could help primary care physicians identify patients at high risk for suicide and prompt interventions for the most vulnerable populations. Data from the EHR linked to other sources, such as the NVDRS, could build further on this progress to better inform effective suicide prevention efforts.

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