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Research to reduce the suicide rate among older adults: methodology roadblocks and promising paradigms

Dr. Katalin Szanto, M.D.,
Department of Psychiatry, Western Psychiatric Institute and Clinic, 3811 O'Hara St., Pittsburgh, PA 15213

Dr. Eric J. Lenze, M.D.,
Department of Psychiatry, Washington University School of Medicine, St. Louis, Missouri

Dr. Margda Waern, M.D., Ph.D.,
Waern is with the Section of Psychiatry, Department of Clinical Neuroscience, Sahlgrenska University Hospital, University of Gothenburg, Gothenburg, Sweden

Dr. Paul Duberstein, Ph.D.,
Department of Psychiatry, University of Rochester Medical Center, Rochester, New York; Department of Family Medicine, Weill Medical College of Cornell University, White Plains, New York

Dr. Martha L. Bruce, Ph.D., M.P.H.,
Department of Psychiatry, Weill Medical College of Cornell University, White Plains, New York

Dr. Gary Epstein-Lubow, M.D., and
Department of Psychiatry and Human Behavior, Brown University, Providence, Rhode Island

Dr. Yeates Conwell, M.D.
Department of Psychiatry, University of Rochester Medical Center, Rochester, New York

Abstract

The National Institute of Mental Health and the National Action Alliance for Suicide Prevention have requested input into the development of a national suicide research agenda. In response, a working group of the American Association for Geriatric Psychiatry has prepared recommendations to ensure that the suicide prevention dialogue includes older adults, a large and fast-growing population at high risk of suicide. In this Open Forum, the working group describes three methodology roadblocks to research into suicide prevention among elderly persons and three paradigms that might provide directions for future research into suicide prevention strategies for older adults.

In a pattern seen worldwide, rates of suicide for both men and women increase inexorably with age, reaching their highest peaks in the 85-and-older age group. A similar pattern is found in the United States, at least among men. Although suicide rates in the United States decreased over the past two decades, the number of older adults dying by suicide has remained constant, owing to their increased number in the population. Most elderly persons who attempt suicide or die by suicide suffer from depression (1). However, depression alone cannot adequately explain late-life suicidal behavior, given that only a minority of depressed

(szantok@upmc.edu).

elders actually attempts suicide. Other known risk factors for late-life suicide— such as loss of a significant other, disability, and prior suicide attempt— have limited explanatory power as well.

Existing research has found effective suicide prevention strategies that could be implemented now (2). They include restriction of lethal means and education of providers, especially in primary care. Some developed nations have implemented national suicide prevention plans and have seen reduction in suicide rates ensue (3). Despite these advances, these measures have not gained sufficient attention in the United States. Moreover, even individuals with known risk factors often receive inadequate care. Therefore, it is not surprising that there has been little progress in the United States in suicide prevention, compared with the many advances made in the reduction of mortality from cancer, stroke, and heart disease.

The National Institute of Mental Health, along with the research task force of the National Action Alliance for Suicide Prevention, recently issued a Request for Information to develop a national suicide research agenda. We represent a working group tasked by the American Association for Geriatric Psychiatry to develop recommendations for suicide prevention research in response to this request. In this Open Forum, we describe three major methodology roadblocks to research in suicide prevention and make suggestions for tackling these barriers to progress. Additionally, we identify three innovative research paradigms that hold promise (4).

Methodology roadblocks

Underrepresentation of older adults in suicide research

Given the aging of the U.S. population, it is important that older adults are well represented in studies of suicide (5) and in studies of mental illness and substance abuse in general. For example, although suicide rates are highest among men aged 80 and older, little is known about the factors that contribute to risk in this rapidly growing segment of the population. For example, does problematic alcohol or drug use, including medication misuse, contribute to the risk of suicide in this population? There is reason for concern about the link between substance abuse and suicide, given the high rates of substance use by the baby boom generation and the increasing use of prescription opioids. Similarly, the apparent elevated risk of suicide among anxious older adults has received almost no study.

We recommend that suicide prevention research (both observational and interventional) include specific plans for the study of older adults in sufficient numbers for meaningful analysis. The time has come for both reviewers and funders of grants to take a concrete first step by asking why proposed suicide research studies exclude older adults. Efforts are needed to include homebound elderly persons, who are hard to reach by usual means and are at high risk of suicide (6).

Differentiating "normal" thoughts of death

Although suicidal ideation is a risk factor for completed suicide, thoughts of death are not uncommon among older adults and may reflect normative preparations for death, stimulated by a range of common stressors (illness, disability, bereavement, and isolation) (7,8). But we have only a crude understanding of what differentiates thoughts of death that are a natural phenomenon of aging and thoughts of death that reflect psychopathology. We lack the tools withwhich to determine when thoughts of death warrant intervention. Absent such tools, we cannot target preventive efforts with sufficient accuracy to persons in greatest need. Thus we cannot hope to make such interventions cost-effective.

We recommend the development of better, more nuanced, and valid assessment tools that will allow both researchers and clinicians to make these distinctions. This task requires rigorous psychometric testing of samples of older adults exhibiting normal and pathological death and suicidal ideation.

Social connectedness and its decline in aging

Social connectedness—the degree of positive involvement with family and friends—is key to mitigating suicide risk among older adults. Limited social connectedness is associated with suicidal ideation, nonfatal suicidal behavior, and suicide in later life (9). Yet there are insufficient data on social connectedness and suicide risk among older adults, especially in the context of encroaching disability, medical morbidity, and cognitive decline, to develop preventive interventions.

How social factors at the individual, interpersonal, and community levels elicit and mitigate suicidal behavior remains unknown. New models should be developed and tested. Concrete first steps would be to organize meetings or seek proposals that spur collaboration among researchers with expertise at these various levels and more creative uses of existing data sets, for example, meta-analyses of intervention studies. An ensuing step would be to test whether prevention programs designed to enhance social connections decrease suicide rates among older adults.

Candidate paradigms

Three paradigms represent, in our view, promising directions for research of suicide among elderly populations, particularly the study of interventions to reduce suicide rate and mechanistic research to better understand suicidal behavior.

Care transition models

Individuals who are already under medical or psychiatric care but who are at high risk of falling through the cracks at key transition points require heightened vigilance. For example, the oldest age stratum has both the highest suicide rate and the lowest percentage of antidepressant use. In fact, only 17% of suicide victims aged 85 and older were taking antidepressants, according to one recent U.S. study (10). In addition, 20% to 25% of elderly patients are considered "lost to follow-up" (11), and rates of completed suicide among elderly persons peak in the three months following discharge from psychiatric units (12). Older patients who die by suicide are far more likely to have been seen by primary or specialty medical care providers than by mental health professionals; therefore, practitioners require training and support in assessment and management of suicidal patients.

General medical illnesses (cancer, notably, as well as lung and renal disease) and chronic pain increase suicide risk among older adults. Suicides of patients with general medical illness typically occur early in the course of treatment. Among patients with end-stage renal disease, for example, risk of suicide is highest within three months of dialysis initiation; in cancer, risk of suicide is highest within 12 months of diagnosis (13). Physicians may underappreciate their patients' mental health needs and thus fail to inquire about suicidal ideation. In the event of a patient's disclosure of suicidal ideation, physicians may not know how to respond. Suicide prevention opportunities exist during both the "informal" care transitions that occur at the time of diagnosis, especially illnesses with a poor prognosis, and the formal care transitions, such as those described below. Mental health care providers direct significant attention to suicide prevention at the time of illness diagnosis; however, opportunities for more effective suicide prevention include enhancing illness detection, bolstering care maintenance, and improving care transitions.

We recommend testing of novel care transition interventions specifically for suicide prevention, including during transitions from both general medical and mental health care in emergency rooms or hospitals to the community, home, or long-term care settings. Interventions that improve continuity of care are now being promoted by the Centers for Medicare and Medicaid Services (CMS) as a way to achieve the aim of integrating care for populations and communities (14). The CMS Innovation Center's community-based care transitions program has adopted these interventions as a way to reduce medical rehospitalizations. These interventions, which include the care transitions intervention (CTI), Project Re-Engineered Discharge, and the transitional-care model (TCM), may provide a blueprint for building care transition interventions designed to reduce suicide risk.

Such interventions could range from automated telephone or postcard follow-up for individuals at low risk of suicide to home- or office-based evaluation of persons with prior suicide attempts or other markers of elevated risk. For example, a model aligned with the CTI coaching approach could provide education regarding medication self-management and problem solving to at-risk individuals at the time of hospital discharge. A different model, following the lead of successes achieved by the TCM, could rely on a transitional-care clinician to "bridge the gap" after hospital or emergency room care. As interventions among medical patients have demonstrated, efforts that go beyond automated follow-up are likely to improve the process of patient-provider decision making and communication at critical junctures, resulting in enhanced discharge planning and better coordination between inpatient or emergency and outpatient teams.

Decision processes and associated cognitive vulnerabilities

Poorly understood heterogeneity underlying the decision to commit suicide is one of the key obstacles to the development of effective interventions. Rather than search for a common biological substrate of all suicidal behavior, research should identify cognitive vulnerabilities, such as deficits in executive function or impaired reward learning, and other vulnerabilities of the suicidal diathesis that lead to impaired decision processes and relate these processes to neural network abnormalities. There is accumulating evidence that cognitive functions play an important role in the suicidal diathesis. For example, low IQ and other indicators of low cognitive reserve are associated with death by suicide and with suicide attempts. Depressed patients who have attempted suicide show impaired executive control and specific impairments in learning and decision making compared with nonsuicidal depressed patients (15,16). Brain changes associated with degenerative and vascular illnesses and with normative aging affect circuits critical for decision making. Age-dependent decline in executive function and decision competence (17) may contribute to the accumulation of stressful life events (18) and to the decision to take one's life.

We recommend mechanistic research with functional neuroimaging in tandem with behavioral economic paradigms to elucidate the neurobiology of suicide among older adults. Collaborative initiatives, such as conferences and pilot study proposals that bring together behavioral economic, neuroimaging, and suicide researchers, would be an important step.

Accident research as a novel intervention model

An attempted or a completed suicide may share some commonalities with an accident; both may be seen as a consequence of an interaction between long-standing conditions and acute situational factors. In both cases, a potentially life-threatening situation may arise if the demands of the acute situation exceed the capabilities of the individual. One potential model for understanding late-life suicidal behavior is the cognitive reliability and error analysis method (CREAM) (19). The CREAM is an accident-prevention model that has been successfully applied in process industries, in air traffic control, and, more recently, in the

analysis of traffic accidents. The model highlights cognitive "overload" as a tipping factor and could be particularly relevant in understanding late-life suicidal behavior, given the reduced cognitive reserve found in this age group.

We recommend adaptation and testing of the CREAM and other accident-prevention models that can inform the development of interventions for suicide prevention.

Conclusions

In this Open Forum, we identify research directions that hold promise for improving understanding of the high suicide rate among older adults and how to reduce it. We propose research on normal versus pathological death ideation, suicide risk and substance use, and social connectedness as well as on decision making and related cognitive factors. It is vital that these and other studies include older adults who are at elevated suicide risk.

The focus of our work group was responding to NIMH's request for recommendations for future research. There remains, however, an urgent need to train the health care workforce to meet the mental health needs of elderly persons (20). In the near term, implementation of practice guidelines in the United States can reduce suicide risk among elderly individuals. Political decision making and short-sighted public health policies can represent additional roadblocks, as can the attitude that deaths in this population are to be expected and accepted, no matter their source.

Acknowledgments

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