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Issues in Research on Aging and Suicide

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Abstract

Late-life suicide is a complex clinical and public health problem. In this article, some of the key complexities inherent in studying late-life suicide are discussed in the service of promoting high quality late-life suicide prevention science. We discuss the following research issues: the relatively greater lethality of suicidal behavior in later life (compared to younger ages); the lack of data on whether thoughts of death in later life are indicators of suicide risk; the fact that older adults do not tend to seek specialty mental health care, necessitating moving research into primary care clinics and the community; the lack of theory-based research in late-life suicide; the unclear role of cognitive impairment; and the promise of taking a "patient centered" and "participatory research" approach to late-life suicide research efforts. We believe that these perspectives are too often not capitalized upon in research on suicide prevention with older adults and that voice of the older person could contribute much to our understanding of why older adults think about and act on suicidal thoughts, as well as the most acceptable ways to reach and intervene with those at risk.

The more one learns about late-life suicide, the clearer the complexities become. On the whole, older adults maintain (and even increase) emotional well-being compared to those at younger ages (Carstensen et al., 2011). Yet, at the same time, adults aged 70 and older have the highest rates of suicide deaths in most regions in the world (World Health Organization, 2014). Thus, later life is both a time of enhanced well-being and a time of markedly increased risk for suicide. As another example, there appear to be not just age effects on suicide risk, but cohort effects as well, with the Baby Boomer and later cohorts likely bringing with them an elevated suicide rate as they enter a time of heightened risk (Phillips, 2014).

In this article, some of the key complexities inherent in studying late-life suicide are discussed in the service of promoting high quality late-life suicide prevention science and generating ideas and directions for future research. We discuss the relative lethality of suicidal behavior in later life and how that has implications for the design of preventive intervention studies for older adults. Next, we discuss an emerging body of literature on the nature of thoughts of death and wishes for death in later life and whether "death ideation" is

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an indicator of risk for suicide in later life; we encourage researchers to consider this basic question in their studies on suicide risk in later life as it could inform risk assessment and selection of intervention targets. We then discuss key settings for researchers to address in studies of late-life suicide, including primary care and the aging services network, including our suggestions on what type of interventions may be best suited for these settings. Next, we discuss the relative lack of theory-driven research in late-life suicide prevention studies and make a call for grounding future research in psychological, sociological, and/or biological theories to promote hypothesis driven studies of etiology as well as investigation of mechanisms of effectiveness for intervention studies. The next research issue we address is the role of cognitive impairment, including dementia, as well as cognitive deficits, as diatheses for suicidal behavior in later life, and suggest future directions for clarifying the role of cognition in late-life suicide risk. Finally, we conclude with an integration of our directions for future research with a discussion of the unifying themes of the roles of aging research, the perspective of patient centeredness, and the use of community participatory research methods.

Lethality of Late-Life Suicidal Behavior

Suicidal behavior in older adults is more likely to result in death than at younger ages. In the US in particular, older men are more likely to use firearms to attempt suicide than at younger ages (Kaplan & Geling, 1999) and are likely to die from their attempts (Conwell, 2014). The ratio of suicide attempts to suicide deaths is estimated to be 10-20:1 in the general population and as high as 200:1 in adolescents (Nock et al., 2008). Among older adults, however, there are estimated to be only 1 to 4 suicide attempts for each death by suicide (Crosby, Cheltenham, & Sacks, 1999; McIntosh, Santos, Hubbard, & Overholser, 1994). This disparity may be explained by the medical illness burden of older adults making any injury more likely to result in death; their relatively greater social isolation, making life-saving rescue less likely; and the suicidal person's greater lethality of planning and implementation (Conwell et al., 1998).

Combine this lethality with the fact that older adults are less likely to report suicidal thoughts than individuals at younger ages (e.g., Duberstein, et al., 1999), and the significance of this problem looms large. To address this issue, we, along with our colleagues and others, have emphasized taking a public health approach to late-life suicide prevention (Conwell, Van Orden, & Caine, 2013; Knox, 2014). This approach emphasizes prevention across the spectrum of interventions, not just those interventions that target high-risk individuals, which is most often considered in the literature. The Institute of Medicine has suggested the use of terminology describing preventive interventions at three levels: indicated, selective, and universal (Institute of Medicine, 1994). Indicated interventions are those that target high-risk individuals; in the case of suicide prevention, this might include individuals with suicidal thoughts, previous suicide attempts, or psychiatric disorders. These types of interventions most often are provided in mental health and primary care clinics. Examples include, antidepressant medications, cognitive therapy for suicide attempters (Brown et al., 2005), problem solving therapy for late-life depression (Arean et al., 2010), and collaborative care models for late-life depression (Unutzer et al., 2002).

Selective preventive interventions are those that target individuals or groups with more distal risk factors; in the case of late-life suicide, this might be socially disconnected older adults, or those with multiple comorbid disorders and significant functional impairment. These types of interventions could be provided in many settings outside the mental health or primary care clinic, such as through aging services agencies—a potential benefit given that older adults do not tend to seek specialty mental health services. A selective preventive intervention that provided supportive phone calls to older adults (mostly women), called the Tele Help—Tele Check program, was found (in a quasi-experimental design) to significantly reduce the number of suicide deaths (De Leo, Dello Buono, & Dwyer, 2002).

Finally, universal prevention strategies target the entire population of older adults. Examples include legislation (e.g., restricting access to potentially lethal means), or public health messaging campaigns, for instance on the importance of social engagement for all older people.

Given the lethality of suicidal behavior in later life, we propose that indicated preventive interventions may be less likely to be effective at reducing suicide deaths at a population level than at younger ages. Given that most older adults who die by suicide will do so on their first attempt, targeting older adults who have attempted suicide, for example, will fail to prevent the deaths of the majority of older adults at risk. We do not mean to suggest that indicated interventions should not be provided when an older adult presents with a suicidal crisis—in that case interventions must be highly aggressive and intensive. Rather, we suggest that more research is needed that examines the effectiveness of selective interventions that target groups at risk but well before the development of the acutely suicidal state, as intervening at this point in the trajectory toward suicide may be “too late” for some older adults. Some studies exist, including the Tele Help—Tele Check study described above, as well as a study we are conducting with our colleagues of the effectiveness of peer companionship for socially disconnected older adults (Van Orden et al., 2013), but more work is needed. Finally, all forms of intervention—universal, selective, and indicated—play an important role in suicide prevention in later life. Indeed, the most useful prevention models are likely ones that are multi-layered, including universal, selective, and indicated components.

Thoughts of Death in Later Life

Are thoughts of death in later life a normative response to the nearing of the end of life, and/or the stressors and challenges of aging? Or are thoughts of death an indicator of risk for suicide? What about wishing for death in later life—is this an indicator of suicide risk or weariness with life that does not increase risk for suicide? These are empirical questions that have not been fully answered. In this section, we provide a brief overview of the scientific literature that has begun to address the issue of thoughts of death in later life.

Estimates of the prevalence of death ideation (i.e., thoughts of one's own death or wishes for death), also called passive suicide ideation, in later life are quite variable depending on the setting, characteristics of the sample, timeframe assessed, and the measure used (for a review, see O'Riley, Van Orden, & Conwell, 2014). Importantly, there are definitional issues

that vary across samples: thoughts of one's own death and wishing for one's death may have different relationships with suicide risk, yet they are often included together under the umbrella of death ideation. For community samples of older adults, lifetime prevalence rates of passive suicide ideation range from 18.7% (Rurup, Deeg, Poppelaars, Kerkhof, & Onwuteaka-Philipsen, 2011) to 40.9% (Cohen, Colemon, Yaffee, & Casimir, 2008), while prevalence in the past month has been estimated at 6.5% (Ayalon & Litwin, 2009). For primary care samples, the past year prevalence has been estimated at 27.5% (Bartels et al., 2002) and for the past two weeks the prevalence has been estimated as 15% (Raue et al., 2010). For depressed older adults, estimates of past week prevalence of passive suicide ideation range from 25% (Bruce et al., 2004) up to 58% (Britton et al., 2008).

These prevalence estimates should be interpreted in light of several findings regarding reporting of death ideation in later life. Gallo and colleagues (Gallo, Anthony, & Muthen, 1994) examined age differences in the endorsement of symptoms of depression, including thinking about and wishing for death, using latent trait analysis, which allowed the authors to compare younger and older adults on how often they endorsed the various symptoms of depression given comparable levels of depression severity. They found that, after adjusting for gender, minority status, cognitive functioning, employment status, marital status, and severity of depression, older adults (those aged 65 or older) were more likely to endorse thinking about death and wishing for their death compared to younger adults, but were less likely to endorse depressed mood. These findings suggest that thinking about and wishing for death may be more frequently endorsed by older adults, if the characteristics of the older adults are appropriately considered, especially adjustments for level of depressive symptoms; this is essential given that the raw prevalence of death ideation in this sample indicated that death ideation was *less* likely to be reported by older adults. It was only after adjusting for level of depression severity that it was clear that older adults were more likely to endorse passive suicide ideation. Another study found that older age is associated with decreased likelihood of reporting depressed mood and both passive and active suicide ideation among depressed suicide attempters and non-attempters (Duberstein, et al., 1999). The authors of this latter paper suggest that older adults may be more likely to escape detection in terms of their suicide risk because of this lower rate of reporting thoughts of suicide. However, depression severity was not accounted for in their analyses, and doing so could possibly have changed their findings. Together, these papers indicate that the “true” prevalence of passive suicide ideation among older adults is difficult to estimate. Older adults with comparable levels of depression are less likely to endorse feelings of depressed mood but more likely to endorse passive suicide ideation than younger adults—a finding that only emerges when estimating the “true” level of depression severity using a latent trait model. Passive suicide ideation may be more common in later life; does this mean, however, that it is normative for older adults to wish for death?

Several studies suggest that this may not be the case. Szanto and colleagues (1996) found that among older adults with recurrent major depression, those who endorsed passive suicide ideation were very similar in their clinical presentations to older adults who endorsed active suicide ideation, and that over time, older adults very often switched from passive to active suicide ideation and vice versa during depressive episodes. These data suggest that among

depressed older adults passive and active suicide ideation in later life may represent similar levels of suicide risk. In line with this hypothesis, the Geriatric Suicide Ideation Scale includes a “death ideation” subscale which measures a passive wish to die (Heisel & Flett, 2006); this subscale is significantly correlated with the “suicide ideation” subscale which measures an active wish to end one's own life. Thus, passive and active suicide ideation may be closely linked in later life in the context of depressive illness.

Studies conducted by our group addressed this issue of whether wishing for one's death in later life is normative. In one paper, we examined this question in a sample of 85 year olds from Sweden (Van Orden, Simning, Conwell, Skoog, & Waern, 2013). We found that the majority of older adults who endorsed passive suicide ideation within the last month also endorsed either active thoughts of killing themselves in their lifetimes or significant depressive or anxious symptomatology in the past month, indicating that passive suicide ideation was closely linked with indicators of suicide risk. However, there was a small proportion of older adults who reported thoughts that life was not worth living (10%) and desire for death (5%) in the absence of these risk factors for suicide (i.e., active suicide ideation, depression, anxiety). Thus, we sought to further understand this group of older adults in a subsequent study. Using a sample of older adults with elevated levels of social and functional impairment, we sought to examine if there might be a group of older adults who responded to the stresses of aging, including functional impairment, with passive suicide ideation, who were not necessarily at risk for suicide (as evidenced by a lack of active suicide ideation and a lack of depression and anxiety). Our results were largely inconsistent with the assumption that passive suicide ideation reflects normative developmental processes (i.e., coming to term with aging) because the vast majority of those who endorsed thinking life was not worth living and wishing for their death also endorsed active suicide ideation (either recently or in the past year) and/or significant depression/anxiety (Van Orden et al., 2014a). However, there was a small minority of our sample (3%) who endorsed thoughts that life was not worth living in the absence of desire for death and suicide. Thus, it is possible that thinking that life is not worth living and desiring death are not equivalent in terms of their association with suicide risk and that some older adults may believe life is not worth living without being at elevated risk for suicide.

The most compelling data for determining whether thoughts of death or wishes for death are associated with suicide in later life would be a longitudinal analysis comparing survival rates among older adults with and without death ideation at baseline. This analysis has not been conducted. However, a retrospective (uncontrolled) analysis of older adults who died by suicide found that “life-weariness” and wishes for death were frequently the most intense level of suicide ideation expressed to a close informant during the year preceding the suicide death. The authors conclude that passive suicide ideation may signal risk for suicide in some older adults, particularly those with residual symptoms of depression, or other risk factors, such as interpersonal problems, functional impairment, or physical pain (Waern, Beskow, Runeson, & Skoog, 1999). An analysis of responses to the Patient Health Questionnaire-9 (PHQ-9), a depression self-report measure that includes an item assessing “thoughts that you would be better off dead or of hurting yourself in some way,” found that among outpatients aged 13 and older, those endorsing thoughts of death or self-harm were significantly more likely to attempt or die by suicide in the months following their completion of the

questionnaire than those who denied those thoughts (Simon et al., 2013). This association remained after controlling for age, sex, treatment history, and severity of depression symptoms. Limitations of this study with regards to our question regarding the prognostic significance of death ideation in later life include that thoughts of death and self-harm were grouped together and not analyzed separately, and the sample was not limited to older adults, but included patients aged 13 and older. Future research specifically examining thoughts of death and wishes for death among older adults over time is needed. Further, qualitative research on the meaning of thoughts of death that older adults themselves ascribe to these thoughts could shed light on what types of death ideation may be pernicious with regards to suicide risk, and which thoughts, if any, may reflect distress not necessarily reflective of suicide risk.

The ultimate challenge, however, for suicide prevention, is not necessarily showing that death and suicide ideation are functionally the same, but showing for whom they function similarly and for whom they function differently, and in both cases how these thoughts translate to behavior. For depressed older adults, passive and active suicide ideation may both indicate increased risk for suicide. However, there may be a group of older adults who, in the midst of aging-related stressors such as increased disability and declining physical health, believe that their quality of life has diminished to a point where life is no longer worth living, but they would never consider suicide. Identifying subgroups for whom death ideation is an indicator of suicide risk versus an indicator of distress and diminished quality of life is a key area for research in late life suicide. However, regardless of the context of the belief that life is not worth living, in all cases it represents dissatisfaction with quality of life. For some, this belief may resolve on its own, while for others, intervention may be needed. Identifying for whom and under what contexts intervention is needed to resolve death ideation should be a priority for research.

Important Settings for Late-Life Suicide Research

The settings where it may be possible to reach and intervene with older adults at risk for suicide differ from those for younger adults. In particular, older adults are not likely to present for care in mental health clinics (Conwell & Thompson, 2008; Young, Klap, Sherbourne, & Wells, 2001). Rather, primary care is a key site for prevention: two-thirds or more of older adults who die by suicide are seen by primary care physicians within a month of their deaths, and up to half within a week (Conwell et al., 2000; Luoma, Martin, & Pearson, 2002). However, what does this mean should be done? A common reaction many professionals have to learning about the number of older adults seen in primary care in the months and weeks before their deaths by suicide is to promote mandated screening for suicide ideation in primary care. In line with this view, research suggests that brief depression screens can accurately identify older adults with suicidal thoughts (Heisel, Duberstein, Lyness, & Feldman, 2010). However, we suggest that mandated, universal screening is a premature, impractical, and incomplete solution.

The United States Preventive Services Task Force (USPSTF) states that there is not enough known about the benefits and risks of routine screening in primary care for suicidal thoughts to recommend such screening for all patients; they note, however, that physicians should “be

aware of psychiatric problems in their patients and should consider asking these patients whether they have considered suicide and refer them for mental health care" (p. I-22, U.S. Preventive Services Task Force, 2014). In short, the research literature simply is not strong enough yet regarding the effectiveness of screening for suicide risk to mandate suicide risk screening in primary care settings for all patients. However, the USPSTF *does* recommend screening for depression in adults (U.S. Preventive Services Task Force, 2009), but only "when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up." Thus, until consistently effective and widely accessible interventions to prevent suicide are implemented, one appropriate response to the rates of older adults who die by suicide who are seen in primary care is to ensure that best practices regarding depression treatment are provided in that setting. The IMPACT model for integrated depression care management for older adults (Unutzer, et al., 2002) is one example. IMPACT stands for Improving Mood-Promoting Access to Collaborative Treatment and was tested in a large randomized trial. The ingredients of IMPACT's collaborative care model include a depression care manager (e.g., social worker) who is located in the primary care clinic and provides psychoeducation, care management, support of antidepressant usage (including monitoring of treatment response), and evidence based psychotherapy (in this case, Problem Solving Therapy); supervision of the care manager by a psychiatrist and primary care expert; and education of primary care physicians in stepped care protocols for antidepressant prescription. The IMPACT model has been shown to improve patient outcomes for depression and to reduce suicide ideation among older adults receiving the intervention (Unutzer, et al., 2002; Unutzer et al., 2006), and is being widely disseminated internationally (http://impact-uw.org/).

A similar model was tested in the PROSPECT trial (Bruce, et al., 2004). PROSPECT stands for The Prevention of Suicide in Primary Care Elderly: Collaborative Trial. This study tested a care management intervention in primary care, and a primary outcome variable was suicide ideation. The rationale of PROSPECT is that effective treatment of depression should reduce suicide risk in older adults. The intervention consisted of care managers introduced into primary care practices with psychiatric supervision; care managers were responsible for working with primary care physicians to deliver algorithm-based antidepressant treatment, monitor treatment response, encourage adherence, and offer evidence-based psychotherapy (in this case Interpersonal Psychotherapy). PROSPECT was effective in the treatment of depression and was also associated with a faster resolution of suicide ideation (compared to care-as-usual) over two years (Alexopoulos et al., 2009). The PROSPECT intervention is also the first depression care management study in older adults to have a documented effect on mortality, with those patients with major depressive disorder at baseline who received the intervention being 24% less likely to die during follow-up compared to patients in care-as-usual (Gallo et al., 2013). Deaths from cancer were more common in usual care patients compared to those who received the intervention. No deaths by suicide were reported.

Finally, although not tested in a randomized trial, and not specifically focused on older adults, a collaborative care model for depression treatment and suicide prevention implemented in a large health maintenance organization (HMO) of about 200,000 members

was found to reduce the suicide rate from to 89 per 100,000 members to zero suicides for nine consecutive reporting quarters (Hampton, 2010). These data suggest that the “Zero Suicide” concept of the 2012 National Strategy for Suicide Prevention (U.S. Department of Health and Human Services (HHS) Office of the Surgeon General and National Action Alliance for Suicide Prevention, 2012; zerosuicide.sprc.org) is not only aspirational, but also attainable. Taken together, these studies on collaborative care indicate that treating depression and addressing suicide risk in older adult primary care patients can save lives, thereby emphasizing the importance of primary care as a site for intervention with older adults at risk for suicide.

Another response to data that indicate the importance of primary care is to improve the linkage of primary care to the Aging Services Network (ASN) of agencies. The ASN was initially developed as part of the Older Americans Act to help ensure that adults aged 60 and older are connected to supportive services necessary to maintain independent living. Specifically, ASN organizations provide older adults access to services for nutrition, long-term care and supports, disease prevention, health promotion, and vulnerable elder rights protection. As we have discussed previously (O'Riley et al., 2014), the ASN is a key resource for late-life suicide prevention. Older adults accessing ASN services report high levels of psychological distress (Richardson, He, Podgorski, Tu, & Conwell, 2010), functional impairment and medical comorbidity (Richardson, Simning, He, & Conwell, 2011), as well as both active and passive suicide ideation (O'Riley, et al., 2014). Further, the ASN is designed and well-equipped to manage several risk factors for late-life suicide, including functional impairment and social isolation. Routine screening for depression is possible in ASN agencies; the largest ASN provider agency in our region now screens all older adults seeking care management services for depression, suicide risk, anxiety, cognitive impairment, and alcohol misuse. They also provide evidence based depression care through the PEARLS program, a collaborative care depression treatment for late-life depression (Ciechanowski et al., 2004). A key part of PEARLS when patients do not show improvement after four to five weeks, is coordination of care by the team psychiatrist with primary care physicians, who prescribe antidepressant medications when indicated. Thus, an important component of late-life suicide prevention is the coordination of care between primary care and other venues for service provision, including aging services.

This coordination of care is a key component of the movement toward patient centered care. “Patient centeredness” refers to an approach to medical care that places patients’ needs and wants front and center during encounters between patients and providers (Duberstein & Jerant, 2014). Patient centered care involves attention to the whole person, including social needs, thus would emphasize inclusion of aging services providers as key players in an older person's health. Another response, therefore, to the data indicating that older adults at risk for suicide present in primary care, is to promote such health care reform initiatives as the patient centered medical home (PCMH), but with emphasis on incorporation of social services into the integrated care team. The Agency for Healthcare Research and Quality (AHRQ) proposes that PCMH's should have five key characteristics (Agency for Healthcare Research and Quality, 2014): 1) provision of comprehensive care that addresses prevention, chronic care, and acute care through the coordination of health care teams; 2) provision of patient-centered care that addresses patient and family priorities, emphasizes the patient-

physician relationship, and attends to the whole person (i.e., social needs as well as medical diagnoses); 3) provision of care coordination across the entire healthcare system—specialty care, hospitals, home health care, and community services and supports—especially during care transitions; 4) provision of accessible services, including shorter wait times for acute problems, access to a member of the healthcare team during off-hours, communication with the healthcare team via alternate modes of communication, like email, and increased hours for patients to meet with providers; 5) provision of high quality and safe healthcare, through such activities as evidenced-based medicine and use of clinical decision-support tools with patients and families, as well as collecting performance measurement and improvement data on services provided. The PCMH has the potential to improve health care delivery for older and younger adults alike, and may thereby serve to reduce suicide risk through a range of selective preventive interventions; for example, collaborative care of depression, diabetes, and other health conditions; an enduring relationship with a PCP that may promote disclosure of suicidal thoughts; enhanced care coordination during care transitions (e.g., from hospital to home, or to a long-term care facility); and increased access to providers for acute problems. Future research should investigate opportunities afforded by the adoption of the PCMH model for reduction of suicide risk in later life. For example, does adoption of the PCMH model lead to greater continuity and trust in the patient-provider relationship leading to increased detection and disclosure of suicide ideation? Does the PCMH improve care transitions such as those from psychiatric hospitals to home and long-term care facilities to home, such that suicide risk is reduced during those high-risk periods? Does the presence of care managers cause increased implementation of collaborative care models for depression treatment and suicide risk? Might “caring letters” interventions be possible to implement with the population approach to healthcare taken by PCMH?

Our discussion of health services in relation to suicide prevention has thus far been focused on systems and practices of developed countries. Services differ, and resources are often more scant, in developing countries. Although not focused on late-life suicide, a promising stepped-care intervention using lay persons as care managers in primary care clinics in India demonstrated a 36% reduction in suicide plans/attempts during a 12 month follow-up period (Patel et al., 2010). Thus, a key future direction for suicide prevention in later life involves testing interventions that are feasible, acceptable, and effective across diverse settings. Further, understanding *how* these interventions work (i.e., mechanisms), as well as how they are implemented (i.e., fidelity) will be key to ensuring the success of interventions outside the realm of clinical trial settings. Regarding mechanisms of interventions, identifying mechanisms common to suicide interventions could have significant public health impact: implementation would be more effective because the key psychological processes that must be impacted by the intervention are known and could be tailored to be delivered in a culturally sensitive and acceptable manner.

Finally, a common characteristic of older adults at risk for suicide is social isolation. Social support has long been recognized as a buffer against stressful events (Cohen & Wills, 1985), and those older adults without social supports are at greater risk for suicide, and other negative health outcomes. Other proposed protective buffers against suicide risk, include meaning in life (Krause, 2007), and feelings of agency and autonomy (Johnson, Wood,

Gooding, Taylor, & Tarrier, 2011). Gatekeeper programs may detect older adults at risk for suicide who are isolated in their own homes, with potentially low feelings of agency, who would not otherwise seek care. Gatekeeper programs involve teaching individuals who regularly come into contact with older adults warning signs that an older adult is at risk for negative outcomes (e.g., suicide, unsafe living conditions, etc.) and how to share that information with a gatekeeper agency, which takes responsibility for engaging the older adult in services, as well as short-term case management and referral to longer term programs/services. Gatekeepers could include postal workers, meals on wheels drivers, meter readers, grocery store clerks, pharmacists, and others. The Institute of Medicine report on suicide prevention (Goldsmith, Pellmar, Kleinman, & Bunney, 2002) calls for the implementation of gatekeeper programs for older adults. The studies by Oyama and colleagues (Oyama et al., 2008) support this recommendation. The studies examine the effectiveness of a multi-component intervention for late-life suicide that included gatekeeper training in the form of universal screening for depression in older adults and psychoeducation on mental health in older adults for the older adult community (i.e., gatekeeper training). In some instances, the intervention also included volunteer, and peer support activities. This intervention was shown (in a meta-analysis of five quasi experimental studies) to be associated with a reduction in suicide deaths: the suicide reduction was observed for women whose follow-up was conducted by a psychiatrist or general practitioner and for men whose follow-up was conducted by a psychiatrist (but not a general practitioner). Psychiatrists and general practitioners took different actions in response to positive depression screens. These results suggest that gatekeeper programs may reduce suicide deaths in older adults, but there may be gender differences in response rates and, further, that the necessary components of the program follow-up for positive depression screens should be empirically delineated (e.g., which actions taken are associated with positive outcomes), thereby indicating future directions for research on gatekeeper programs.

Theory-based Research

Much of the research on the prevention of late-life suicide (and suicide across the lifespan) has been atheoretical, emphasizing reduction of empirically derived risk factors — those variables shown to be associated with increased probability of suicidal behaviors occurring. Specifically among older adults, psychological autopsy studies have identified depression and other psychiatric illnesses (e.g., Waern et al., 2002b), physical illness (e.g., Waern et al., 2002a), functional impairment (e.g., Conwell et al., 2009), pain (e.g., Harwood, Hawton, Hope, Harriss, & Jacoby, 2006), personality factors such as neuroticism and low openness to experience (e.g., Duberstein, Conwell, & Caine, 1994), a previous suicide attempt (e.g., Chiu et al., 2004), social isolation (e.g., Turvey et al., 2002), and family conflict (e.g., Rubenowitz, Waern, Wilhelmson, & Allebeck, 2001) as key factors differentiating older adults who died from suicide from community controls (for a review, see Van Orden & Conwell, 2011). However, the body of research on risk factors does not clearly delineate how preventive interventions should be designed: Given an array of risk factors, what should be the target of intervention? One response is to treat depression aggressively, including treatment to remission. However, not all older adults at risk for suicide have

symptoms for which depression treatment is indicated. In such situations, scientific theory regarding etiological mechanisms underlying associations between empirically-demonstrated risk factors and suicidal behavior can help determine priorities for interventions research. Understanding mechanisms that determine suicide risk is needed to ensure that the key aspects of the intervention are implemented when transported to another site or used with diverse populations on which the intervention was not tested.

There are suicide specific theories that can be applied to the development or testing of suicide preventive interventions, each of which helps in part to suicidal behavior. Beck and colleagues' (Beck, Brown, Berchick, Stewart, & Steer, 1990; Beck, Steer, Kovacs, & Garrison, 1985) hopelessness theory is able to explain the robust association between hopelessness and later death by suicide. Biologically-based theories are able to explain associations such as those between serotonergic abnormalities and suicide (Mann, 2003; Plutchik, Van Praag, & Conte, 1989; van Praag, 2001). Family systems theories (Richman, 1986; Sabbath, 1969) can explain associations between family conflict and suicide. Emotion-based theories, such as Shneidman's psychache theory (Shneidman, 1998) and Linehan's (Linehan, 1993) emotion dysregulation theory, are able to account for the association between social isolation—an emotionally painful experience—and suicide. Two contemporary theories of suicide, the interpersonal theory of suicide (Van Orden et al., 2010) and the motivational-volitional theory of suicide (O'Connor, 2011), propose to account for many empirically demonstrated risk factors, including the associations between previous suicidal behavior and later death. The interpersonal theory emphasizes the role of low (or thwarted) belongingness and perceiving oneself to be a burden on others as causes of the desire to die by suicide, and an acquired capability for tolerating the fear and pain involved in suicidal behavior as a necessary element for ideation to transition to behavior. The motivational-volitional model emphasizes the role of defeat/humiliation, entrapment, and threat to self as key constructs in suicide risk. All of these theories have relative merits and weaknesses, and all could be further leveraged in designing and testing interventions.

In this issue, articles by Joiner and Stanley, and Fiske and O'Riley provide perspectives on theory and late-life suicide. Specifically, Joiner and Stanley provide an overview of theoretical perspectives on suicide (with an emphasis on psychological theories) and apply these theories to late-life suicide. Fiske and O'Riley discuss the role of lifespan developmental theories of aging and how these perspectives can inform late-life suicide prevention. Both of these articles provide rich generative research material to foster ideas and future research.

Left unaddressed thus far, however, is the open question as to whether a theory specific to late-life suicide would be useful for the field. Such a theory would rest on the assumption that late-life suicide differs in important ways with regards to etiology and epidemiology so as to warrant an age-specific theoretical account. Alternatively, theories not designed to be age specific could be adapted to address the specific challenges (and opportunities) older adults face during the aging process, including psychosocial, environmental, and biological challenges and changes. For example, given that bereavement is a common stressor in later life, and that complicated grief reactions are associated with increased risk for the presence and persistence of passive and active suicide, as well as the presence of indirect suicidal

behaviors (e.g., not taking medications, not eating) in older adults (Szanto et al., 2006), bereavement might play a prominent role in a theory of late-life suicide. Regardless of which route—theory generation or theory adaptation—we urge researchers to consider the role and value of theory in their work both for the generation of ideas and hypotheses and for the investigation of mechanisms of intervention effectiveness.

Cognition and Cognitive Impairment

The role of cognitive impairment, dementia in particular, as a potential risk factor for suicide is under-studied and not well understood (Haw, Harwood, & Hawton, 2009). However, cognitive changes play an important role in health and well-being in later life, and represent one domain in which risk factors for suicide in later life may differ from those of middle aged and younger adults, thus warranting attention. A prospective study using nationwide register data from Denmark found that a diagnosis of dementia made during hospitalization significantly increased risk for dying by suicide, even when controlling for mood disorders (Erlangsen, Zarit, & Conwell, 2008). Risk was highest during the first several months after the diagnosis of dementia was made, though for some, risk continued to be elevated years after the diagnosis. However, psychological autopsy studies have not identified dementia as a distinguishing feature of late-life suicide deaths (Haw, et al., 2009) and overall the literature remains mixed as to whether dementia confers risk for suicide (Haw, et al., 2009).

What is clearer in the literature is that cognitive abnormalities, especially executive functioning and decision-making deficits, appear to characterize suicidal individuals among both younger/middle-aged (Bartfai, Winborg, Nordstrom, & Asberg, 1990; Cha, Najmi, Park, Finn, & Nock, 2010; Gujral et al., 2012; Keilp, Gorlyn, Oquendo, Burke, & Mann, 2008; Keilp et al., 2012; Keilp et al., 2001; Marzuk, Hartwell, Leon, & Portera, 2005; Westheide et al., 2008) and older adults (Clark et al., 2011; Dombrovski et al., 2008; Dombrovski et al., 2010; Dombrovski et al., 2011; Gibbs et al., 2009; Gujral, et al., 2012; King et al., 2000; McGirr, Dombrovski, Butters, Clark, & Szanto, 2012; Richard-Devantoy et al., 2012; Szanto et al., 2011; Vanyukov et al., 2014; Wiktorsson, Runeson, Skoog, Ostling, & Waern, 2010). A more fine-grained interpretation of the studies described as measuring executive functioning above reveals older adults at risk for suicide are characterized by deficits in cognitive control (associated with high-lethality suicide attempts), deficits in decision-making (associated with lower lethality impulsive suicide attempts), and deficits in social cognition and social decision making (for a review, see Kiosses, Szanto, & Alexopoulos, 2014). One recent study using fMRI (Vanyukov, et al., 2014) found that greater impulsivity in social problem solving, as well as the presence of past unplanned suicide attempts, were associated with increased activation in the prefrontal cortex when viewing angry faces, suggesting that socioemotional stimuli are processed differently among older adults with impulsive suicide attempts. In sum, deficits in cognitive control, and potentially social decision making, may be especially troublesome with regards to suicide risk in later life, but the cognitive patterns of deficits/differences likely differ for unplanned and planned attempts.

Future research on the role of cognitive factors and cognitive impairment should seek to examine how cognition and cognitive impairment might interact with life stress to increase

risk for suicidal behavior, perhaps by limiting help seeking, impairing emotion regulation or distress tolerance skills, or by increasing hopeless cognitions (Kiosses, et al., 2014).

The Voice of the Older Person

Research is needed that utilizes qualitative methods to capitalize on the wisdom attained by listening to the voice of the older person. What do the older adults themselves believe will help them maintain their quality of life and enhance their reasons for living? Quantitative studies addressing protective factors have shown that strong reasons for living are associated with adaptive coping skills (i.e., problem-focused and emotion-focused coping)(Marty, Segal, & Coolidge, 2010) and a sense of belonging (McLaren, Gomez, Bailey, & Van Der Horst, 2007). Further, higher meaning in life (Heisel, et al., 2006) and higher social support (Parkhurst, Conwell, & Van Orden, 2015) demonstrate negative associations with suicide ideation in older adults, indicating they may serve as protective factors. Spirituality has also been shown to buffer the association between loss of meaning in life and depression among older adults (Bamonti, Lombardi, Duberstein, King, & Van Orden, 2015). Thus, research is beginning to emerge on potential protective factors for suicide in older adults. Qualitative studies could add to this literature. For example, by examining differences between men and women—what protects against suicide for men and for women—given that cultural scripts for suicidal behavior have been found to play a role in the association between physical illness and suicide (Waern, et al., 2002a), and may play a role in the association between social factors and suicide (Fassberg et al., 2012).

Qualitative studies have examined reasons for suicidal behavior in older adults. A qualitative examination of reasons older adults gave for their suicide attempts found that older adults attributed their attempts to multiple reasons—there did not appear to be a single most common cause (Van Orden et al., 2014b). Those attributions, however, did cluster into several themes: a desire to escape, reduced functioning and autonomy, psychological problems, including depression, somatic problems and physical pain, perceived burdensomeness, social problems that reflected either low belongingness or family conflict, and lack of meaning in life (Van Orden et al., 2014b). Another qualitative investigation of the development of a “wish to die” in older adults found similar themes: being widowed, loneliness, being a victim, dependency, and wanting to be useful (Rurup et al., 2011). A commonality in both studies was that most older adults did not view depression as the source of their wish to die or suicide attempt. While depression is one of the strongest risk factors for suicide deaths in older adults, a patient-centered perspective would emphasize asking the older adult what lead to his/her feelings that life is not worth living or of suicide, and potentially including those reasons as targets in preventive interventions. A qualitative investigation of the experiences of older adults before their deaths by suicide using a psychological autopsy method with informant interviews found several common themes around reasons for desiring death, including—“this life has been lived” and “life as a burden.” Another theme concerned “losing themselves” in the face of mounting physical disability and dependence on others. Finally, the belief that “death is better than life” emerged as a theme, and many of the older adults had expressed a wish to die to others in their lives (Kjolseth, Ekeberg, & Steihaug, 2010). Thus, there is a growing literature

addressing the older adult's views on reasons for suicide ideation, but less examining protective factors (such as reasons for living) or ways to prevent suicide.

Community participatory research (CBPR) is a methodology for, and an attitude toward, conducting research using academic/community partnerships. In CBPR projects, academic researchers are true partners with community members in the conceptualization of research problems, study design, collection of data, interpretation of results, and dissemination of findings. The goal is the promotion of health and well-being among community members, often with a focus on the reduction in health disparities. Researchers learn from community members and vice versa. The end product is community-relevant research to promote positive change and health improvement in the community. This approach to research is not often used in late-life suicide prevention efforts (or suicide prevention projects in general).

One example of the field of suicidology moving in the direction of CBPR has come in the recent (2014) effort to make suicide attempt survivors (and those who have experienced suicidal thoughts) partners with a leadership voice in American Association of Suicidology through the creation of the Attempt Survivors/Lived Experience Division (http://www.suicidology.org/members/divisions/attempt-survivor), with the promise that this move will lead to a more meaningful input of survivors and consumers' voices in the questions, priorities, and design of suicide prevention research studies. The goal of the Division of Lived Experience is to ensure that people who have been suicidal (i.e., thoughts of suicide or suicide attempts) are involved in, and central to, research, policy-making, public messaging, treatment and support. It is our hope that more of these CBPR efforts will emerge as a result of destigmatization of suicide and therefore promote those with lived experience in suicidal behavior as full partners in the research effort for suicide prevention.

Conclusions

Aging confers both vulnerabilities and strengths for emotional well-being (Charles, 2010). A greater integration of the basic research on the psychology, biology, and sociology of aging with applied work on clinical and public health approaches to late-life suicide has the greatest potential to move the field forward towards reducing the suicide rate among older adults. In short, our call is for an approach to late-life suicide prevention that draws on the strengths of multiple disciplines to bring differing and complementary ideas of how aging may both protect against and increase risk for suicide in later life.

Associations have long been observed between sociopolitical and macroeconomic factors and suicide rates (e.g., Durkheim, 1897; Yip & Caine, 2011). As changes in the context and make-up of older adulthood continue to occur, they will likely influence rates among older adults over time. For example, healthcare delivery and financing reforms may help reduce suicides in later life by their emphasis on outcomes and quality of care, patient and family centered approaches, and integrated service delivery models that bring mental health care into primary care offices. The latter approach, as we described above, has been shown in two well-designed clinical trials of collaborative, primary care-based late life depression care management to result in greater reduction in suicidal ideation than care as usual (Alexopoulos, et al., 2009; Unutzer, et al., 2006).

As well, characteristics of birth cohorts must also be considered. Phillips' work indicates that while the current older adult cohort has had higher suicide rates at each point in the lifecourse than its preceding generation, subsequent birth cohorts demonstrate even higher risk, suggesting that as they age into older adulthood—a time of heightened risk—rates may rise even higher (Phillips, 2014).

Throughout, we have encouraged taking a "patient centered" and "participatory research" approach to late-life suicide research efforts. "Patient centeredness" places the older adult and his/her viewpoints and needs front and center. Ways to incorporate patient centeredness into late-life suicide research could be to use mixed methods approaches that include qualitative aspects to incorporate the voice of the older person into studies. Participatory research approaches, in a similar spirit, seek to incorporate the voice of the subject into research questions and designs. By partnering with older adults and those who serve them in the communities, the more relevant our research will be to the lives of the older people we are trying to save and improve. We believe that these perspectives of community participatory research and patient centeredness are too often not capitalized upon in research on suicide prevention with older adults. By utilizing these perspectives, the voice of the older person could contribute much to our understanding of why older adults think about and act on suicidal thoughts, as well as the most acceptable ways to reach and intervene with those at risk.

Finally, we have suggested throughout that taking a public health approach to late-life suicide prevention. In line with such an approach is consideration of policy issues surrounding late-life suicide. For example, the literature suggests that collaborative care models addressing depression and suicide risk are likely to be helpful in preventing suicide among older adults. Policies promoting the integration of behavioral health into primary care, including appropriate reimbursement for mental health services in primary care, especially for integrated models, could potentially have an impact on reducing suicides in later life. Relatedly, policies and legislation addressing firearm accessibility could have an impact on late-life suicide rates, as the presence of a firearm in the home is associated with increased risk for suicide among older adults, even when accounting for psychiatric illness (Conwell et al., 2002). Addressing these issues in the Veterans Health Administration may be especially potent with regards to reducing late-life suicide given the number of older men who are Veterans and keep firearms at home. Other target groups could include retired police officers, firefighters, and physicians; the latter group—physicians—has an empirically demonstrated elevated rate of suicide (Center et al., 2003). Finally, universal prevention regarding the reduction of ageism in societies could lead to policies that address the challenges of later life, while not neglecting the opportunities that also come with age. These policies should also be examined empirically to determine whether their effects, when implemented, lead to beneficial effects for the lives of older adults.

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