

# Suicide and Its Prevention Among Older Adults

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**Objective:** To review the research on the epidemiology, risk and resiliency, assessment, treatment, and prevention of late-life suicide.

**Method:** I reviewed mortality statistics. I searched MEDLINE and PsycINFO databases for research on suicide risk and resiliency and for randomized controlled trials with suicidal outcomes. I also reviewed mental health outreach and suicide prevention initiatives.

**Results:** Approximately 12/100 000 individuals aged 65 years or over die by suicide in Canada annually. Suicide is most prevalent among older white men; risk is associated with suicidal ideation or behaviour, mental illness, personality vulnerability, medical illness, losses and poor social supports, functional impairment, and low resiliency. Novel measures to assess late-life suicide features are under development. Few randomized treatment trials exist with at-risk older adults.

**Conclusions:** Research is needed on risk and resiliency and clinical assessment and interventions for at-risk older adults. Collaborative outreach strategies might aid suicide prevention.

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## Clinical Implications

- Assessment of risk and resiliency and use of standardized measures, if implemented, might improve suicide risk detection.
- Combining antidepressants and interpersonal psychotherapy may help resolve suicide ideation.
- Mental health providers are encouraged to collaborate with older patients' primary care providers, social service workers, and family and other gatekeepers and to employ mental health outreach efforts.

## Limitations

- Risk-factor research has been limited by the statistical rarity of suicide, by the use of diverse inclusion criteria for age, by uncontrolled studies or use of varied control groups, and by little research on resiliency factors.
- Few older adult suicide assessment instruments and evidence-based interventions exist.
- This review is limited to English-language publications.

**Key Words:** *suicide, suicide ideation, suicidal behaviour, geriatrics, older adults*

Adults aged 65 years or over have high rates of suicide worldwide (1). Approximately 1.3 die by suicide in Canada every day (2). Older adults have long had high suicide rates (3–7); however, programmatic study of geriatric suicide is relatively recent. The prevalence of late-life suicides may

increase as the baby boom cohort reaches retirement age (8), given this population's high suicide rates (9,10) and because they are moving into a phase of life in which rates are high. However, baby boomers' strength in getting health care needs met (11) may help to stem that tide. Geriatric suicidology is in

a relatively early phase of development, with limited information available on risk detection and treatment implementation. The aging of the North American population necessitates greater understanding of late-life suicide risk, resiliency, and detection and intervention options. Before reviewing the literature on suicide among older adults, I briefly address pertinent definitions and methodological issues.

### Definition of Terms

Knowledge regarding suicide among older adults has been limited by imprecise use of terms. In this article, I employ O'Carroll and colleagues' definitions of suicide ideation, suicidal behaviour, and suicide (12); I avoid moral-evaluative or pseudolegalistic terms (13) and use the term "older adult" to refer to individuals aged 65 years or over.

### Methodological Issues

Despite high rates among older adults, suicide is a low-base-rate occurrence, limiting research and hindering risk detection. The 1997 suicide rate for adults aged 65 years or over in Canada was 12.4 per 100 000 population members (2), or 1 suicidal death for every 8065 individuals. Epidemiologic data typically derive from national mortality data or population polls. Risk-factor research necessitates alternative methodologies. Prospective studies are indispensable in determining risk and resiliency but require immense sample sizes and lengthy follow-up, raising feasibility constraints. Existing longitudinal data and database linkage are often used instead. Retrospective research typically uses the

so-called PA methodology (14), involving collection of all-source information from medical and mental health record review, coroner and (or) police reports, and interviews with family, caregivers, and acquaintances of those who died by suicide. Rigorous PA studies involve data collection from living control subjects or those who died by natural or accidental causes, depending on the study's hypotheses. Uncontrolled studies are less rigorous, and their findings more tentative, as one cannot ascertain whether features present among those who died by suicide were not also present among control subjects. Cross-sectional methods are typically employed in studies of suicidal ideation and behaviour; national databases assessing the prevalence or correlates of these variables do not yet exist. Intervention RCTs for at-risk older adults are nearly nonexistent.

I next present epidemiologic data from national mortality statistics, review the literature on risk and resiliency factors for death by suicide, together with the literature on RCTs with suicidal outcomes, and discuss suicide prevention strategies in the context of health service use by at-risk older adults.

### Epidemiology of Suicide Among Older Adults in Canada

In 1999, 481 adults aged 65 years or over died by suicide in Canada (2). Age, sex, and race are consistent risk indices: older white men are overrepresented among suicides (15,16). Late-life suicide rates have declined steadily since the 1930s, except for a temporary increase in the 1980s (7). In most countries, women are more likely to engage in suicidal behaviour, yet men are more likely to die by suicide (17,18); certain Asian countries may constitute exceptions to this rule. In China, the estimated suicide rate for women between 1995 and 1999 (25.9/100 000) exceeded that of men overall (20.7/100 000); however, men aged 60 to 84 years had a higher suicide rate (72.0/100 000) than did older women (64.3/100 000) (19). The ratio of male to female suicides in Canada for those aged 65 years and over was approximately 5:1 in 1997 (23.0/100 000, compared with 4.5/100 000) (2); in 2000, the ratio for those aged 75 years and over was nearly 8:1 (22.7/100 000, compared with 2.8/100 000) (20). Reasons for sex differences in suicide rates remain elusive.

Older adults who die by suicide commonly use violent behaviour, employ lethal means with a high intent to die, and do not typically passively refuse to eat or take needed medications (21). Official statistics underestimate the true number of suicides, excluding those with more equivocal circumstances or mislabelling them as natural or undetermined deaths (22). Suicidal older men in Canada typically die by firearm or by hanging or suffocation, whereas women die by poisoning or suffocation (23–25); in the US, firearm use is the most common means of suicide among older men and women (26). The

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#### Abbreviations used in this article

ADL	activities of daily living
BDI-II	Beck Depression Inventory-second edition
GDS	Geriatric Depression Scale
GHS	Geriatric Hopelessness Scale
GSIS	Geriatric Suicide Ideation Scale
HDRS	Hamilton Depression Rating Scale
IADL	instrumental activities of daily living
IMPACT	Improving Mood-Promoting Access to Collaborative Treatment
IPT	Interpersonal Psychotherapy
MADRS	Montgomery-Åsberg Depression Rating Scale
NIMH	National Institutes of Mental Health
PA	psychological autopsy
PRISM-E	Primary Care Research in Substance Abuse and Mental Health for the Elderly
PROSPECT	Prevention of Suicide in Primary Care Elderly Collaborative Trial
RCT	randomized controlled trial
SSI	Scale for Suicide Ideation

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ratio of suicidal behaviour to death by suicide among older adults (< 4:1) is far less than that among the general population (20:1) and among young adults (100 to 200:1) (27–28). Because suicidal older adults often succumb to their injuries, early and aggressive intervention by health care and mental health care providers is imperative, necessitating improved knowledge about suicide risk (29) and resiliency (30).

### **Suicide Risk and Resiliency Factors**

Suicide is not a specific disorder but a painful process typically accompanied by biological, psychological, social, and existential factors. Nonmodifiable risk factors such as age, ethnicity, and sex may be useful for assessing risk in the aggregate but are less useful in individual cases: not every older white man is at elevated risk. I next review the literature on potentially modifiable suicide risk and resiliency factors.

#### ***Search Strategy***

I searched the MEDLINE (from 1966 to late August of 2005) and PsycINFO databases (from 1967 to late August of 2005), using the following terms: geriatric, senior, elderly, aged, or older adult; suicide or self-destruction; and psychological autopsy or case control. I limited the search to English-language publications on human beings aged 65 years or over. This strategy produced 222 unique publications; I discarded 170 that did not focus on older adults and 21 that were case studies, theoretical or methodological articles, review articles, or correlational studies. I also included 5 PA studies reported in Conwell and others' review (15), some of which included adults aged 50 years or over, and one recently published uncontrolled PA study that did not emerge from this search. I grouped these 37 articles into 26 sets of unique analyses (see Table 1). Twelve did not include a control group or included only a few case-control analyses, 10 employed a case-control methodology, 2 were case-control prospective studies, and 2 were case-control database linkage studies. I chose to include findings from uncontrolled studies because there is a relative lack of information on late-life suicide and the uncontrolled studies might possibly be used to help generate hypotheses to be tested in controlled studies. I strongly advise readers to consider findings from uncontrolled studies tentative and requiring replication with more rigorous methodologies.

#### ***Suicidal Ideation and Behaviour***

Older adults who communicate suicidal ideation and intent or harm themselves are at elevated risk for suicide. Swedish researchers found that nearly 40% of adults aged 65 years or over communicated a wish to die or thoughts of suicide to a health professional in the year prior to suicide (30). Nearly 75% communicated death ideation or suicide ideation to a family member or acquaintance in the year prior to suicide, and only 8% denied suicidal thoughts when

asked directly (30), while 20% had engaged in prior suicidal behaviour (31). A prospective study in the UK of adults aged 55 years and over who presented to hospital following self-harm revealed a high risk of suicide in the following year and over the next 15 years (32).

#### ***Mental Illness***

Mental illness is highly prevalent among older adults who die by suicide. A PA study in Hong Kong indicated that approximately 85% of adults aged 60 years and over who died by suicide had at least one major mental disorder. Subjects with mood disorders had more than a sixtyfold increased risk for suicide, compared with living control subjects (33). Similar findings were obtained in studies in Canada (23,34), the US (35), the UK (36), New Zealand (37), Finland (38), and Sweden (39). Syndromal and subsyndromal mood disorders are highly associated with late-life suicide; psychotic disorders (33) and substance misuse (39,40) also confer independent risk. Anxiety disorders may increase risk but have not yet been shown to do so, independent of a comorbid mood disorder (39). Although the presence of mental illness increases risk for suicide, as many as 10% to 14% of older adults who die by suicide do not appear to be suffering from diagnosable mental illness (41–44). Additional factors thus play a role in conferring risk.

#### ***Personality Factors***

Personality vulnerability increases suicide risk among older adults. Axis II pathology may be less prevalent among older, compared with younger, individuals who die by suicide (45). Personality disorders or rigid personality styles may potentially increase risk, especially when combined with losses or stressors, including painful disease processes (36,46–51). More research is needed to test this theory. At-risk older adults may be introverted, may lack interest in novel activities or ideas, or may refuse to seek or accept help from others (50, 52). Research is needed to assess whether difficulty adjusting to physical, emotional, and social change or to a perceived increasing loss of control (47,51) further increases risk.

#### ***Medical Illness***

Increased suicide risk is associated with the presence and number of physical illnesses. Visual impairment, seizure disorder, neurologic disorders, cancer, chronic pulmonary disease, arthritis, bone fractures, and moderate or severe pain all increase risk (23,34,52,53). The prospect of living with dementia may confer risk (54,55), but this has yet to be studied in detail. Harwood and colleagues reported a significantly higher prevalence of dementia and delirium among older adults who died by natural causes, compared with those who died by suicide (36); however, this finding may as likely be due to choice of control group as to a potential protective role of advanced-stage dementia. Pathophysiological processes

**Table 1 Major design characteristics of suicide risk factor studies among older adults**

Study	References	Location	Sample groups
Uncontrolled and partly controlled PA studies			
1	41	UK	100 cases SD: 30 aged $\geq$ 65 years; 70 aged $<$ 65 years; 30 control subjects aged $\geq$ 65 years, AD for some analyses
2	42,43	Monroe County, NY	18 cases SD aged $\geq$ 50 years
3	27,35	Monroe County, NY	141 cases SD: 46 aged 21–34 years; 45 aged 35–54 years; 36 aged 55–74 years; 14 aged 75–92 years
4	46	Cook County, IL	72 cases SD $\geq$ 65 years
5	150	Cook County, IL	14 cases SD $\geq$ 65 years, with chronic dyspnea
6	51	Milan, Italy	5 cases SD $\geq$ 50 years
7	62	San Diego, CA	204 cases SD: 61 aged 16–30 years; 94 aged 31–59 years; 49 aged $\geq$ 60 years
8	45	Finland	229 cases SD: 186 aged $<$ 60 years; 43 aged $\geq$ 60 years; 20 aged 60–69 years; 23 aged $\geq$ 70 years; 11 men aged $\geq$ 60 years, with MDD; 8 women aged $\geq$ 60 years, with MDD
9	63	Finland	1022 cases SD: 803 aged 20–59 years; 219 aged $\geq$ 60 years
10	151	Finland	211 cases SD aged $\geq$ 65 years; some analyses compared cases with younger SDs with unstated sample size and age
11	38	Finland	12 cases SD aged $\geq$ 60 years
12	44	Québec	101 cases SD aged $\geq$ 60 years
Case–control PA studies			
13	65	Maricopa County, AZ	30 cases SD; 30 control subjects ND; all men aged $\geq$ 60 years
14	37	New Zealand	53 cases: 22 SB; 31 SD; 269 control subjects LC; all aged $\geq$ 55 years
15	33	Hong Kong	70 cases SD; 100 control subjects LC; all aged $\geq$ 60 years
16	52	Hong Kong	67 cases SD; 157 control subjects: 91 LC; 66 SB; all aged $\geq$ 65 years
17	152	Monroe County, NY	35 cases SD $\geq$ 50 years: widowed $\leq$ 4 years; widowed $>$ 4 years
18	48,49	Monroe County, NY (cases) Baltimore, MD (control subjects)	52 cases SD: 29 aged $<$ 50 years; 23 aged $\geq$ 50 years 52 control subjects LC: 29 aged $<$ 50 years; 23 aged $\geq$ 50 years
19	66	Monroe County, NY	42 cases SD; 196 control subjects LC; all aged $\geq$ 60 years
20	56,64,153	Monroe and Onondaga Counties, NY	86 cases SD; 86 matched control subjects LC; all aged $\geq$ 50 years
21	36	Central England	54 cases SD; 54 matched control subjects ND; all aged $\geq$ 60 years
22	30,31,39,53, 68,154	Sweden	85 cases SD; 153 control subjects LC; all aged $\geq$ 65 years
Prospective case–control studies nested within cohort studies			
23	67	Southern California	19 cases SD; 228 matched control subjects LC; median age 73 years
24	57	CT, MA, IA, and NC	20 cases SD; 400 matched control subjects; all aged $\geq$ 65 years
Retrospective case–control database linkage studies			
25	34	Alberta	822 cases SD; 944 control subjects MVA; all aged $\geq$ 55 years
26	23	Ontario	1329 cases SD; 5315 matched control subjects LC; all $\geq$ 66 years

Note: Study 5 is a subset of study 4. SD = Suicidal death; SB = Suicidal behaviour; AD = Accidental death; ND = Natural death; LC = Living control subjects; MVA = Died by motor vehicle accident; AZ = Arizona; NY = New York; MD = Maryland; IL = Illinois; CA = California; CT = Connecticut; MA = Massachusetts; IA = Iowa; NC = North Carolina; MDD = Major depressive disorder

may be involved in the association of medical illness and suicide risk: the finding that perceived physical illness increases risk suggests that psychological processes also play a role (56, 57). Although findings were not specific to older adults, De Leo and colleagues suggested that fears of sensory loss may increase suicide risk (58). Some older adults who die by suicide are severely or terminally ill at the time; however, most are not (41,46,51). The hotly debated topics of euthanasia and physician-assisted suicide are outside the scope of this review (see 59 for related discussion). Clinicians should, however, be aware that requests for physician-assisted suicide or euthanasia and the presence of suicidal ideation among the medically ill are often signs of depression requiring treatment (60).

#### ***Psychosocial Factors: Negative Life Events, Transitions, and Social Factors***

Life transitions are common with aging, and many older adults have developed healthy and effective strategies for coping with life changes (61) and serve as positive role models for younger generations. Those who employ poorer coping strategies and experience transitions as depressing, frightening, or overwhelming are at increased risk for suicide. Recent financial and (or) legal difficulties and employment change can increase risk (31,56,62,63). Risk is associated with real or perceived interpersonal difficulties. Risk is higher for the unmarried; for those who live far from friends or relatives or who visit them infrequently; for those who experience loneliness, family discord, and separation; or for those who lack a confidant (31,37,56,57,64,65).

#### ***Functional Impairment***

Few researchers have explored the association of functional decline with late-life suicide risk; existing data indicate that functional impairment increases risk. An Italian descriptive PA study found that 2 of 5 older adults with cancer who died by suicide had poor functioning (51). A Canadian descriptive PA study reported moderate-to-severe functional impairment in over 50% of older adults at the time of death by suicide and in nearly one-third within the prior 6 months (44). Controlled PA studies indicate more functional limitations among suicidal older adults and a greater need for assistance with ADLs and IADLs (31,52,66). Tsoh and colleagues found that older adults who died by suicide had poorer IADL functioning than did living control subjects; those engaging in nonfatal suicidal behaviour had poorer IADL functioning than did living control subjects and those who died by suicide (52).

#### ***Resiliency—Protective Factors***

Little research to date has explored the relation of resiliency to late-life suicide; however, some potentially protective factors have emerged from studies of suicide risk. Some protective factors simply appear to be the absence of a known risk factor, such as not having mental illness (33), having less disease

burden (23), and being more extraverted, open to experience, and conscientious (52). Other protective factors appear to reflect positive health behaviours, including breast self-examinations in women and drinking alcohol only moderately in both sexes (67). Having children is protective for adults over age 75 years and for older men (31,68). Living with one's children emerged as a protective factor in a study of late-life suicide in Hong Kong (52). Research is needed to assess whether culture and (or) socioeconomic status moderates this association. Older adults with friends or relatives to whom they feel close, or with whom they visit frequently, are similarly at lower risk (57). Having a hobby and being actively involved in an organization appears protective (31,68). Religious practice appears to protect against suicide (52,57), although this association may differ across religions and cultures. Research on suicide ideation among psychiatric patients and older adults suggests that perceived meaning in life, life satisfaction, adaptive coping, lack of hopelessness, and degree of religious commitment may increase psychological well-being and decrease suicide risk (69,70).

#### ***Summary: Assessment of Suicide Risk***

Knowledge of suicide risk and resiliency factors can aid clinician assessment of patient risk and indicate the need for follow-up evaluation and clinical care. Clinicians should actively assess for suicide risk and resiliency factors among older patients and increase care for those with multiple risk factors and without social supports or other protections, in collaboration with patients' families and other health care providers. Suicide risk factors are derived from aggregated information and so may be insufficient for determining a particular patient's risk at any given time. It is unclear how a clinician should best combine and weigh the presence and severity of specific risk factors, although suggested strategies exist (71,72). To my knowledge, no clinical research evidence demonstrates that following these or other methods of combining risk factors effectively reduces suicide risk or prevents suicide among older adults. Although not specific to older adults, attempts to predict individual cases of suicide with a risk-factor approach were not successful (73–75), owing in part to the statistical rarity of suicide. Assessment of the presence of risk and protective factors nonetheless remains a necessary component of the suicide-risk assessment. Clinicians are advised to augment their risk-assessment strategies with the use of standardized measures to better understand the psychological factors that potentially contribute to suicide risk.

There is little evidence that screening for suicide ideation prevents suicide (76), likely owing to measurement issues and to the low suicide base rate. Psychological practice guidelines identify the need for assessment measures developed or standardized with older adults (77); few clinical measures exist to

assess late-life depression and suicide risk (78). Nonstandardized assessment procedures are of limited use in assessing risk and may even hamper progress in suicide research and prevention. The NIMH published a commissioned review of suicide assessment measures for adults and older adults (79); most of these tools were neither developed nor validated with at-risk older adults. Brown (79) noted that a promising new measure is under development assessing a protective psychological factor—reasons for living—among older adults (80). Commonly used depression scales may have limited utility. The HDRS (81) includes only a single item assessing a range of constructs from dissatisfaction with life to severe recent suicidal behaviour on a simple 0-to-4 scale. It is limited to the past week and is not tailored to older adults. Similarly, the BDI-II (82) assesses suicide ideation with a single item and was not developed with geriatric patients. Measures of late-life depression (for example, the GDS; 83) and hopelessness (for example, the GHS; 84) do not specifically assess suicide ideation. However, these measures can differentiate older adult groups with high or low suicide ideation (85,86). A set of 5 GDS items assessing hopelessness, worthlessness, emptiness, an absence of happiness, and absence of the perception that it is “wonderful to be alive” was found to be highly associated with suicide ideation in a heterogeneous sample of adults aged 65 years or over (85). Clinician-rated suicide ideation was assessed with the SSI, a measure developed among psychiatric patients (87). The SSI has acceptable reliability and validity among older adults (88) but does not differentiate among acceptance of mortality, death ideation, and suicidal intent—potentially distinct constructs in later life (89). Self-rated suicide ideation was assessed with the GSIS, a 31-item measure of suicide risk (Suicide Ideation, Death Ideation, and Loss of Personal and Social Worth) and resiliency (Perceived Meaning in Life) (70, 88,90). The GSIS was developed among Canadians aged 65 years or over and has shown strong internal consistency, test-retest reliability, and construct validity among community, residential, and patient samples (90). The GSIS is as yet unpublished; however, a Chinese translation of the GSIS has demonstrated robust reliability and validity among older adults in Hong Kong (91). Future efforts are needed to further assess the psychometric properties and usefulness of standardized measures in research and clinical practice.

Clinicians should remain vigilant to the presence of suicide risk factors in older patients, should monitor and restrict access to lethal implements, and should consider hospitalization for those at elevated risk. They should, additionally, consider employing assessment tools and interview techniques to assess depressive symptoms, death ideation, suicide ideation, self-harm history, presence of a suicide plan, and degree of intent to die (72,92,93). Clinicians should assess risk in a

sensitive and respectful fashion and communicate an empathic acceptance of the patient to encourage honest reporting of suicidal symptoms. Any indication during the assessment process that suicide or self-harm is viewed as morally wrong, pathological, or otherwise negative might encourage deception. Clinicians should further assess and work to enhance psychological resiliency over the course of clinical care with at-risk older adults.

## **Clinical Interventions for Suicidal Older Adults**

There is a dearth of clinical research evidence on interventions affecting suicidal outcomes; patients with suicidal ideation and behaviour are commonly excluded from RCTs (94). A recent review of the randomized treatment literature identified few articles showing an association between clinical interventions and reduced geriatric suicide ideation (95). I have updated this search and expanded it to potentially include trials with outcomes of suicidal behaviour.

### ***Search Strategy***

I searched MEDLINE (from 1966 to late August of 2005) and PsycINFO (from 1967 to late August of 2005), using the following terms: suicide, suicidal, and suicidality; treatment, intervention, prevention, clinical, therapy, psychotherapy, medication, medicine, or pharmacotherapy; and geriatric, elderly, senior, aged, or older adult. I limited the search to English-language articles regarding RCTs employing human beings aged 65 years or over. This strategy yielded 60 unduplicated studies, of which only 4 were RCTs reporting outcomes of suicidal ideation or behaviour. Ten studies did not include suicidal ideation or behaviour as outcomes or did not compare suicidal with nonsuicidal treatment groups, 14 studies were not randomized treatment outcome studies, 27 studies were not specific to older adults or did not present findings by patient age group, and 5 studies excluded suicidal patients. Articles that met the search criteria largely assessed treatments for late-life depression.

### ***Randomized Treatment Trials With At-Risk Older Adults***

Mahapatra and Hackett reported the findings from a double-blind parallel group trial comparing venlafaxine and dothiepin for the treatment of major depression in patients aged 64 to 87 years at 9 sites in the UK and the Netherlands (96). Both groups experienced significant decreases in depression scores by posttest, with no between-group differences. Patients receiving venlafaxine had a significant reduction in suicide ideation scores on the MADRS, relative to those receiving dothiepin, at Week 6. These results suggest that venlafaxine may help to reduce suicide ideation among older patients suffering from depression. However, the venlafaxine group had significantly higher

depression severity at baseline than did the dothiepin group, raising the possibility that findings were partly the statistical artifact of the former group having farther to fall on depression measures. Future trials are needed to explore the effects of various medications on reducing suicidal ideation and (or) behaviour among at-risk older adults.

Haight and colleagues randomized 256 newly relocated nursing home residents to a life review intervention, compared with a “friendly visit” control task (89). Participants were aged 60 years or over; free of clinical depression; oriented to person, place, and time; and English speaking. The life review group, compared with control subjects, had significantly reduced depression scores over the 8-week trial and at 1-year follow-up, significantly decreased hopelessness, significantly increased psychological well-being, and a nonsignificant trend toward improved life satisfaction. Life review had no effect on SSI suicide ideation scores. Statistical power was limited by low pretreatment suicide ideation scores, by the administration of pretest measures to only one-half of the participants, and by the potential effectiveness of the “friendly visit,” which gave participants the opportunity to ventilate frustrations about recent relocation. Research suggests that life-review interventions may reduce dysphoria among nursing home residents not suffering from depression (89,97); more research is needed to evaluate whether such interventions can effectively reduce suicide risk.

Szanto and colleagues combined the findings from 3 treatment studies of nonpsychotic late-life depression to explore potential resolution of suicide ideation (98). These included an open trial of nortriptyline and weekly IPT (99), an open trial of paroxetine and weekly IPT, and a randomized, double-blind trial of nortriptyline and paroxetine. Inclusion criteria differed across studies, but at minimum, all studies required that patients be aged 59 years and score 15 on the Mini Mental State Examination and 15 on the HDRS. Findings revealed a significant increase in the percentage denying death ideation or suicide ideation on the HDRS “suicide ideation” item (from 22.5% to 81.6%) by 12 weeks of treatment. Suicide ideation initially decreased rapidly, and then more gradually, as treatment progressed. Patients with more severe pretreatment suicide ideation or a history of suicidal behaviour had slower and more incomplete resolution of suicide ideation. Higher severity of depression was also associated with the speed and degree of resolution of suicide ideation, whereas patient age, age of onset, recurrence status, and inpatient status were not.

Bruce and colleagues presented the initial results of the PROSPECT study, in which primary care patients, aged 60 years and over and with depressive symptoms, were randomized to receive a clinical algorithm comprising antidepressants and (or) psychotherapy, compared with usual care (100). The algorithm specified that citalopram be the first-line antidepressant

for consideration; however, clinicians could prescribe alternative agents if they had a medical reason for so doing. Patients declining medication could be offered a course of IPT. The PROSPECT study explored a collaborative care model of mental health service provision by primary care providers assisted by depression care managers. At 4, 8, and 12 months, patients in the algorithm arm received significantly more medical and psychotherapeutic care than did those in the usual care arm; they experienced a significantly greater reduction in depression symptom severity, greater treatment response, and higher likelihood and rate of remission (100,101). Patients in the algorithm arm additionally displayed a greater decrease in the prevalence of suicide ideation (from 29.4% to 16.5%), compared with the usual care group (from 20.1% to 17.1%,  $P = 0.005$ ) (100). Resolution of suicide ideation in the algorithm group was initially quick, and the greatest between-group difference in prevalence of suicide ideation occurred at 8 months. The presence of suicide ideation was associated with a poorer remission from depression in bivariate, but not in multivariate, analyses (101).

Research with older adults suffering from depression thus suggests that suicide ideation may be effectively treated with antidepressants and (or) IPT, whether provided in primary care or in mental health care settings. Although pharmacologic interventions with potential antisuicidal properties have been reported in psychiatric samples (102), they have yet to be tested with at-risk older adults. These include agents such as lithium (103–105), clozapine (106), and other antipsychotics (107,108). Electroconvulsive therapy may be effective with suicidal individuals (109,110) but has yet to be systematically tested among older adults (111). Cognitive therapy (112), dialectical behaviour therapy (113,114), and problem-solving therapy (115,116) may help reduce repetition of suicidal behaviour among patient samples. These treatments may also help reduce depressive symptoms among older adults (117–119) but have yet to be systematically tested with at-risk older adults. Research with nongeriatric patients with self-harm histories indicates that using an interpersonal mode of therapy (120) effectively reduces suicide ideation, providing converging evidence for the potential effectiveness of interpersonal therapies for at-risk populations. Future research is needed to explore the unique and combined effects of medication and IPT for older adults with depression and suicidality and also to explore additional psychotherapeutic modalities beyond IPT and individual psychotherapies.

## Late-Life Suicide Prevention

### *Health Services Use Among At-Risk Older Adults*

Older adults who die by suicide usually present to primary care providers in the days to months prior to taking their lives (23,121) but rarely seek services directly from mental

health care providers. However, a history of recent or lifetime psychiatric hospitalization confers risk (37,39). Primary care providers face competing demands for limited time during patient visits; only the most salient patient concerns receive their attention (122). Identification of at-risk older adults may be impeded by lack of clinician expertise in detecting depression and suicide risk (123–129). Physicians may believe that older adults suffering from suicidality are noncompliant with treatment (130) and may tend to be reluctant to refer older patients with depression for mental health care (131). The tendency of older adults to minimize or underreport depressive and suicidal symptoms may further impede risk detection (132–135). Isometsä and others found that only 11% of those seen in primary care in the month prior to suicide communicated suicidal intent, although this was not exclusive to older adults (136). Collaborative models of medical and mental health care in primary care settings have thus been developed to help overcome systemic barriers to patient care.

Research from the US supports collaborative models of care linking primary care providers with mental health specialists (122). The PRISM-E study found that older patients were more likely to engage in mental health care services provided in primary care settings, compared with when they were referred for service to mental health clinics or substance abuse treatment centers (137). The IMPACT study indicated that older adults with depression randomly assigned to receive collaborative care showed greater resolution of depression and functional impairment, greater service use, and improved quality of life than did those assigned to receive usual care (138). Collaborative care in IMPACT involved antidepressant prescription and management by a primary care provider, as well as patient education, care management, and (or) brief psychotherapy (specifically, problem-solving therapy) with a depression care manager supervised by a psychiatrist and primary care expert. The PROSPECT study suggested that collaborative models of primary and mental health care may reduce depression and suicide ideation among older adults (100). These studies suggest that psychosocial treatment for depression and suicide risk can be provided in a primary care setting using collaborative models of care. However, many older adults still did not use mental health services in these studies, and the findings are typically less robust than in well-controlled efficacy studies. Although this body of research was conducted in the US managed health care context and real-life feasibility has yet to be demonstrated (139–141), its lessons have fostered the shared care approach in Canada (142). Primary care providers could help assess suicide risk and resiliency and implement therapeutic interventions under consultation or by referral to mental health care providers. Mental health care providers can help educate primary care providers and front-line clinicians in the detection

of suicide risk, can be available for ad hoc consultation with providers and family members, and can assist with treatment planning and management. Additionally, they can coordinate referral to allied mental health professionals or provide direct care themselves.

### *Mental Health Outreach Initiatives*

Mental health outreach may effectively reduce late-life suicide risk. In Japan, Oyama and colleagues used a quasiexperimental design to conduct a 10-year program of community mental health presentations, depression screenings, and mental health outreach to older adults living in the community (143). During the study's intervention stage, a 73% reduced risk of death by suicide was observed for men aged 65 years or over, and a 76% reduced risk was observed for women; risk remained low through the study's maintenance phase. Caution is warranted, as a decrease in 1 or 2 deaths by suicide in a region of the size examined could have greatly affected suicide rates.

In Italy, DeLeo and colleagues indicated that a telephone distress and support program may reduce late-life suicide risk (144). They examined the prevalence of suicides among 18 641 users of TeleHelp-TeleCheck who were aged 65 years and over. Physicians typically refer older patients to this social support service outfitting at-risk individuals with personal alarm buttons linked to a response network (TeleHelp) that provides telephonic support calls twice weekly and (or) as needed (TeleCheck). TeleHelp-TeleCheck users had significantly fewer deaths by suicide than expected overall. Significant risk reduction was observed for female service users but not for male service users. Again, caution is warranted, as observed suicides were compared with estimates based on regional suicide rates, rather than with control subjects.

Researchers in Spokane, Washington, suggest that individuals who commonly come in contact with older adults (such as meter readers, grocery clerks, mail carriers, clergy, and primary care providers) can serve an important gatekeeping function in late-life mental health care and suicide prevention (145). Findings have not yet been published examining suicide risk reduction in the Spokane gatekeeper program. Collaboration among primary care providers, other gatekeepers, and mental health care providers might help reduce suicide risk among at-risk older adults (146).

### *Canadian Suicide Prevention Initiatives*

Suicide is a public health problem requiring multilevel preventive efforts from multiple stakeholders, including researchers, clinicians, policy-makers, and mental health consumers and their families (147). The Public Health Agency of Canada recently commissioned the Canadian Coalition for Seniors' Mental Health, a collaboration of mental health care professionals dedicated to facilitating positive mental health



for seniors, to develop a series of national guidelines in 4 priority areas: suicide, depression, delirium, and long-term care. The guidelines are scheduled for release in early 2006. The overall objectives of the suicide-prevention guidelines are to provide practical advice regarding assessment, intervention, and population-level prevention to clinicians and front-line providers who work with at-risk older adults, as well as to influence policy-makers. It is anticipated that this document will help to establish best practices for the clinical management of at-risk older Canadians.

### Conclusion and Suggested Future Steps

Suicide prevention is a complex set of processes involving interdisciplinary efforts predicated on knowledge of epidemiology, risk and resiliency, and assessment and treatment options. Epidemiologic data reveal that older adults have relatively high suicide rates and that older white men are at especially high risk (2,26). Epidemiologic data are typically limited to cause and mode of death and demographic features. A national database containing in-depth information on suicidal ideation and behaviour would expand surveillance and detection efforts and contribute greatly to research and prevention activities.

Late-life suicide risk is associated with suicidal ideation and behaviour, mental illness, personality vulnerability, medical illness and physical impairment, losses and poor social supports, and functional limitation (15,16). Resiliency factors include integration in social networks and clubs, religious practice, having a hobby, and perceiving that life is meaningful and worth living. A controlled psychological autopsy study is needed to explore risk and resiliency in a representative sample of diverse older adults in rural and urban communities. Such research could help generate hypotheses and test theories of late-life suicide. Research is needed to assess the associations between perceived cognitive and physical impairment and suicide risk and to assess the role of personality in potentially moderating these relations. Research is also needed to explore risk factors for homicide-suicide in older adults (148).

Development and validation of standardized measures of suicide risk are still in the early stages. More work is needed to establish the psychometric properties of existing and developing measures in clinical and residential settings and among diverse populations of older adults, especially in terms of predicting future suicidal thoughts, behaviour, and death by suicide. Improved assessment can improve risk detection and indicate the need for intervention.

Few controlled clinical trials exist on interventions among suicidal older adults. Antidepressants and (or) IPT may help to alleviate risk (96,98,100); however, more research exploring the safety and efficacy of these and other interventions,

including family therapy, is needed (149). Also needed are studies focusing on the treatment of older adults with suicidal features irrespective of depression presence or severity, because not all suicidal older adults suffer from depression. Use of metaanalysis, collaborative multisite studies, and surrogate endpoints can help ensure sufficient statistical power to detect treatment effects in trials with suicidal older adults (95). In addition to randomized controlled therapeutic efficacy studies, effectiveness studies of suicide-prevention strategies are needed to translate findings from internally valid RCTs into externally valid real-world settings and conditions consistent with at-risk older adults' treatment preferences. Collaborative models of primary and mental health care may be of use in helping to resolve depression and reduce suicide risk among older adults (99,122).

Mental health outreach initiatives may help to prevent late-life suicide. Benefits have been suggested for community-based mental health education, screening, and outreach (143), as well as for telephone outreach and support initiatives (144). Collaborative suicide prevention efforts are underway in Canada, informed by the emerging research on late-life suicide. The most successful prevention efforts will encourage collaboration among care providers across the spectrum of care, social service workers, informal caregivers and family members, and at-risk older adults.

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### Résumé : Le suicide et sa prévention chez les adultes âgés

**Objectif :** Examiner la recherche sur l'épidémiologie, le risque et la résistance, l'évaluation et le traitement, et la prévention du suicide des personnes âgées.

**Méthode :** Les statistiques de mortalité ont été étudiées. Des études sur le risque de suicide et la résistance au suicide, et des essais contrôlés aléatoires avec des résultats suicidaires ont été recherchés dans les bases de données Medline et PsycInfo. Les initiatives de dépistage de la santé mentale et de prévention du suicide ont aussi été examinées.

**Résultats :** Environ 12 personnes de 65 ans et plus sur 100 000 meurent par suicide au Canada, chaque année. Le suicide est le plus prévalent chez les hommes blancs âgés; le risque est associé à l'idéation ou au comportement suicidaire, à la maladie mentale, à la vulnérabilité de la personnalité, à la maladie physique, aux deuils et au médiocre soutien social, à l'incapacité fonctionnelle, et à une faible résistance. De nouvelles mesures sont en cours d'élaboration pour évaluer les caractéristiques du suicide des personnes âgées. Peu d'essais de traitement aléatoires existent pour les adultes âgés à risque.

**Conclusions :** Il faut plus de recherche sur le risque et la résistance ainsi que sur l'évaluation clinique et les interventions des adultes âgés à risque. Des stratégies de dépistage en collaboration pourraient contribuer à la prévention du suicide.