Assessment and Treatment of Late-Life Depression
Juliet A. Glover, MD, and Shilpa Srinivasan, MD

ABSTRACT
• Objective: To review the identification, clinical assessment and treatment of patients with late-life depression.
• Methods: Review of the literature.
• Results: Depressive symptoms are present in up to 1 in 4 older adults. Comprehensive evaluation of depressive symptoms in this population often requires a multidisciplinary and collaborative approach between primary care, mental health, and other ancillary providers. Key aspects include a detailed history, physical and mental status examinations, cognitive and functional status assessment, and suicide risk assessment. Treatment options include antidepressants, psychotherapy, and electroconvulsive therapy.
• Conclusion: A systematic approach to evaluating depressive symptoms in the elderly can enhance timely recognition and treatment.

Key words: Late-life depression; clinical assessment; antidepressants; psychotherapy; electroconvulsive therapy.

The U.S. population is aging, and with this comes the potential for increased health care needs. In 2014, there were over 46 million Americans age 65 and over (14.5% of the U.S. population). This number is projected to increase to 88 million by the year 2050 [1]. One in 4 older adults suffers with depressive symptoms that cause distress and functional impairment [2]. The World Health Organization Global Burden of Disease Study found depressive disorders to be the leading cause of disability-adjusted life years (DALYs) and the second leading cause of years lived with disability (YLDs). The burden of disease due to depressive disorders increased by 37.5% between 1990 and 2010, and 10.4% was attributable to aging [3]. These figures underscore the importance of accurate assessment and treatment of depression in the elderly. In this article, we review the identification, clinical assessment, and treatment of patients with late-life depression.

Diagnostic Criteria
Late-life depression (LLD) is defined as onset of depressive symptoms after age 65 years. The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) criteria for major depressive disorder (MDD) is unchanged from the DSM-IV, text revision (DSM-IV-TR) criteria. In order to receive a diagnosis of major depressive disorder, patients must exhibit depressed mood and/or loss of interest plus 4 or more associated symptoms, including changes in appetite, sleep disturbance, psychomotor agitation or retardation, fatigue, inappropriate guilt or feelings of worthlessness, poor concentration or indecisiveness, and recurrent thoughts of death or suicidal ideation. Symptoms must be present nearly every day for at least 2 weeks and cause clinically significant distress or functional impairment [4]. Patients who do not fully meet criteria but still exhibit clinically significant distress may be diagnosed with various sub-syndromal depressive disorders (Table 1).

Prevalence
It is estimated that 1% to 4% of community-dwelling adults age 65 and older suffer from MDD, with women more likely to be affected than men (prevalence of 4.4% vs. 2.7) [2,5–7]. This estimate is low compared with lifetime prevalence of almost 20% in the general adult population [8]. However, when depressive symptoms that do not meet criteria for MDD are considered, prevalence rates increase up to 25% [2,9]. These estimates also vary by clinical setting, with the highest rates (up to 40%) among elderly patients in long-term care facilities [10,11].
Late-Life Depression

While individuals with subsyndromal depression may experience fewer symptoms than those with MDD, clinically significant distress persists, impacting health and functional status. Depression is associated with overall poor social or occupational functioning, cognitive decline, increased health care utilization and cost, increased morbidity and mortality from medical illness, and increased suicide mortality [5,9,10,12].

Identifying LLD

In order to make the diagnosis of LLD, the clinician should be aware that clinical presentations may be varied, and symptoms may not be readily evident [13]. LLD is often under-recognized and under-treated, particularly in busy primary care settings where concerns about physical symptoms may take precedence over screening for behavioral health conditions [14]. Other barriers include phenomenologic differences (prominence of executive dysfunction, neurovegetative and somatic features) in depressed older adults compared to younger counterparts, under-reporting of emotional symptoms, and stereotypical views of emotional dysfunction being a “normal” part of aging [15,16]. Recognition of risk factors for depression can aid in making the diagnosis. Risk factors can be categorized as biological or psychosocial in nature (Table 2) [17]. The most significant risk factors for depression in the elderly include female gender, past history of depression, sleep disturbance, disability, and bereavement [12]. Protective factors include physical health, self-efficacy, social connectedness, and religious involvement [17].

Accurate identification of LLD also requires recognition of the differences in the presentation of LLD compared with onset in earlier life. Depression in younger adults is often marked by depressed mood and loss of interest [18]. In contrast, older adults may present with increased anger or irritability [5]. Younger adults are more likely to report suicidal thoughts while older patients report feelings of hopelessness and thoughts of death [18]. LLD is often characterized by increased somatic complaints, hypochondriasis, or pain [5,18,19]. Another major difference lies in the presentation of cognitive difficulties. Younger patients typically complain of poor concentration or indecisiveness. Geriatric patients may present with cognitive changes including objective findings of slower processing speed and executive dysfunction on neuropsychological testing [17].

Depression rating scales may aid in identification of LLD. They are not a substitute for clinical diagnosis but can be useful as screening tools. Two commonly utilized depression rating scales are the Geriatric Depression Scale (GDS) and the Patient Health Questionnaire-9 (PHQ-9). GDS is a 30-item instrument developed specifically for older adults. Shorter 15-item, 5-item, and 4-item versions exist. The scale utilizes a Yes/No format and can be self- or clinician-administered [20]. One advantage of the GDS lies in its focus on psychological and cognitive aspects of depression rather than neurovegetative symptoms that may overlap with medical illnesses common in older adults [21]. The PHQ-9 is a 9-item self- or clinician-administered screening tool designed for use in primary care settings and has also been validated in geriatric populations [22,23]. The 9 items on this scale correspond to the DSM-5 criteria for major depression. A shorter 2-item version (PHQ-2) has also been validated, and a positive screen on this test should prompt

Table 1. Subsyndromal Depressive Disorders

<table>
<thead>
<tr>
<th>Persistent Depressive Disorder (Dysthymia)</th>
<th>Depressed mood for at least 2 years + 2 of the following: (1) appetite changes, (2) sleep disturbance, (3) low energy, (4) low self esteem, (5) poor concentration/indecisiveness, (6) hopelessness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Specified Depressive Disorders</td>
<td></td>
</tr>
<tr>
<td>Recurrent Brief Depression</td>
<td>Depressed mood + at least 4 associated MDE symptoms lasting 2–13 days and occurring at least monthly for 12 consecutive months</td>
</tr>
<tr>
<td>Short Duration Depressive Episode</td>
<td>Depressed mood + at least 4 associated MDE symptoms lasting 4–13 days</td>
</tr>
<tr>
<td>Depressive Episode with Insufficient Symptoms</td>
<td>Depressed mood + at least 1 associated MDE symptoms lasting at least 2 weeks</td>
</tr>
<tr>
<td>Unspecified Depressive Disorder</td>
<td>Clinically significant depressive symptoms that do not meet criteria for a specific depressive disorder</td>
</tr>
</tbody>
</table>

MDE = major depressive episode. Data from reference 4.
administration of the full-length version. Both versions have approximately 80% sensitivity and specificity in detecting depression. An added advantage of PHQ-9 over GDS is that it can be useful in monitoring treatment response over time [22,23].

**Comprehensive Assessment of LLD**

The comprehensive assessment of patients with LLD can be carried out by health professionals in both mental health or primary care settings. In a multidisciplinary approach, psychiatrists and mental health professionals have collaborated with primary care providers using depression care managers with successful outcomes in managing depression in older adults [24,25]. Complete evaluation of a patient with suspected LLD begins with a history and physical and mental status examination. Other essential components of the evaluation include assessment of cognition, functional status, and suicide risk. Laboratory and neuroimaging studies may be necessary as well. Due to the comprehensive nature of this assessment, a multidisciplinary approach with collaboration between primary care, psychiatry, psychology, and ancillary services such as social work may be necessary. Multiple patient interactions may be required to complete a thorough evaluation.

**History and Mental Status Examination**

As with many other psychiatric illnesses, LLD is a clinical diagnosis. A careful history should be obtained initially utilizing open-ended questions. This should be followed by more directed questions as indicated to elicit the presence of depressive symptoms. The history should be obtained from the patient. A relevant collateral informant can be invaluable in the assessment, especially in cases where there is a comorbid neurocognitive disorder. However, the patient’s informed consent must be obtained prior to obtaining collateral information whenever possible. Psychosocial stressors that may have precipitated or may be perpetuating symptoms should be explored. Such stressors may include recent changes in living situation, loss of social support, recent deaths, or financial difficulties. Biological precipitants also need to be explored including presence of physical illness, depressogenic medications, and comorbid alcohol or other substance use. The patient’s past psychiatric history, psychiatric hospitalizations, and past medication trials should be ascertained. Any family history of depression, other psychiatric disorders, substance use disorders, and suicide attempts should be documented. A full mental status exam including cognitive assessment should be completed [21,26].

**Cognitive Assessment**

Cognitive impairment can be associated with LLD and may be due to the underlying depression or represent a comorbid neurocognitive disorder. Furthermore, the burden of medical illness as well as cerebrovascular and cardiovascular risk factors have been linked to executive dysfunction and reduced processing speed in individuals with LDD [27,28]. Distinguishing between these can be challenging; however, chronology of symptom onset is often helpful. Depression is more likely the etiology of cognitive impairment when depressive symptoms precede onset of cognitive deficits. This type of cognitive impairment is termed dementia syndrome of depression and may improve with treatment of depression [5]. Some patients may progress to develop major cognitive decline, and it remains unclear whether LLD represents a risk factor or prodrome to developing a major neurocognitive disorder [29]. On the other hand, if depression develops later in the course of cognitive decline, there may be an underlying neurocognitive disorder [17]. Up to 20% of individuals with major neurocognitive disorder due to Alzheimer’s disease also have major depression [11]. For these reasons, concomitant assessment of cognition is essential to the evaluation of the older adult presenting with depressive symptoms [30]. Cognitive domains that may be affected include learning and memory, language, attention, perceptual motor abilities, social cognition, and executive function [4]. Many of these domains can be assessed during the mental status examination, with brief cognitive screening tools, or with formal neuropsychological testing.

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**Table 2. Depression Risk Factors**

<table>
<thead>
<tr>
<th>Biological</th>
<th>Psychosocial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender: F &gt; M</td>
<td>Social isolation</td>
</tr>
<tr>
<td>History of depression</td>
<td>Marital status: single, divorced, widowed</td>
</tr>
<tr>
<td>Chronic medical illness</td>
<td>Bereavement</td>
</tr>
<tr>
<td>Chronic pain</td>
<td>Caregiver role</td>
</tr>
<tr>
<td>Sleep disturbance</td>
<td>Low socioeconomic status/financial stress</td>
</tr>
<tr>
<td>Depressogenic medications, eg, opioids, benzodiazepines, beta blockers</td>
<td>Poor perceived health</td>
</tr>
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Adapted from references 5, 11, 12, and 17.
While there are numerous cognitive screening tools, some commonly used, brief tools include the Mini-Cog, the Folstein Mini-Mental State Exam (MMSE), and the Montreal Cognitive Assessment (MoCA). The Mini-Cog consists of a 3-item registration, delayed recall, and clock drawing test and has several advantages over other screening tools. It is a brief test (taking approximately 3 minutes to administer) with good sensitivity and specificity of 80% or greater. Compared with other cognitive screening tools, it is less influenced by level of education, language, or cultural background [31–33]. The MMSE is a longer screening tool consisting of 19 items and requires about 10 minutes to administer. Unlike the Mini-Cog, performance on the MMSE can be affected by level of education and cultural background. However, the MMSE can be administered serially to monitor changes in cognition over time [34,35]. The MoCA is a 10-minute cognitive screening tool first developed to detect mild cognitive impairment (MCI) [36]. The MoCA consists of 7 subscore sections covering visuospatial/ executive function, naming, memory (delayed recall), attention, language, abstraction, and orientation. The total score is 30, and 1 point is added to the score if the testing subject has less than high school/12 years of education. The MoCA has demonstrated better sensitivity than the MMSE for the detection of MCI [36]. Elderly patients with depression often perform poorly on these cognitive screening tests due to apathy and poor effort.

**Functional Assessment**

The diagnosis of LLD requires that symptoms cause significant distress or interfere with functioning. A functional assessment is especially important in the evaluation of the older adult in that it allows clinicians to determine an individual’s ability to live independently and attend to daily needs. Basic activities of daily living (ADLs) include bathing, dressing, grooming, toileting, and self-transfering. Instrumental activities of daily living (IADLs) include more complex daily activities such as preparing meals, administering medications, driving, managing finances, and using simple electronics such as the telephone or remote control [26]. Impairment in IADLs is associated with increased depression severity. Conversely, the severity of depressive symptoms along with associated cognitive impairment predicts IADL impairment [37]. The Philadelphia Multilevel Assessment Instrument is a tool that can aid in the assessment of ADLs and IADLs and has been utilized in studies examining disability in depressed elderly patients [37,38]. Other available scales to quantify functional status include OARS Physical Activities of Daily Living, OARS Instrumental Activities of Daily Living Scale, and Direct Assessment of Functional Status Scale [26].

**Suicide Assessment**

Assessment for suicidality is an integral part of all psychiatric evaluations and is especially important in the evaluation of the depressed older adult. According to the Centers for Disease Control and Prevention, the suicide rate for individuals age 65 and older is 16.6 per 100,000, a figure that is comparable to that for individuals 18–64 years of age [39]. Non-Hispanic Caucasian males age 85 and older have the highest rate of completed suicide (56.5 per 100,000), underscoring the importance of a thorough suicide assessment [39]. Suicidality can range from passive thoughts of death and wishing that one were not alive, to active thoughts of self-harm with plan and intent. A Canadian study found 2% of community-dwelling adults age 55 and older had suicidal thoughts over a 12-month period and, of these, 28% had major depression [40]. A suicide assessment begins with inquiring about the presence of suicidal thoughts, plans, and intent. The 3 most frequently used methods of completed suicide in the elderly are firearms (28%), hanging (24%) and poisoning (21%) [41]. Access to weapons or other lethal means of self-harm such as hoarding of medications should be ascertained.

A complete suicide assessment requires attention to suicide risk factors, protective factors, and warning signs of impending suicide. Risk factors for suicide in the older adult include mood disorders, chronic medical illnesses and associated functional impairment, chronic pain, and psychosocial factors such as social isolation [42]. Mood disorders are present in 54% to 87% of cases of completed suicide, with major depression being the most common [42]. Chronic medical illness and pain can result in functional impairment leading to feelings of excessive guilt or being a burden to loved ones. Protective factors such as social connectedness, spirituality, religious beliefs, and cultural attitudes against suicide may serve as buffers against these risk factors [43]. Warning signs of impending suicide may indicate preparations for suicide and include feelings of hopelessness or lack of purpose, feeling trapped, talking about death, threatening suicide, agitation, social withdrawal, increased substance use and
reckless behavior. Warning signs should prompt action to ensure the safety of the individual [44,45].

**Physical Examination, Laboratory Studies, and Neuroimaging**

Evaluation of LLD is not complete without a physical examination and ancillary studies to identify underlying medical conditions possibly contributing to or mimicking depressive symptoms. Routine laboratory studies include complete blood count, complete metabolic panel, thyroid studies, and urine drug screen. Signs and symptoms of underlying medical conditions may necessitate further laboratory studies [46]. Neuroimaging may reveal signs of cerebrovascular disease which can predispose, precipitate, or perpetuate depression in older adults [47].

**Treatment**

Treatment of LLD can take many forms and occur in various settings. Geriatric psychiatrists have expertise in the assessment and treatment of mental illness in the elderly. Workforce estimates for 2010 revealed 1 geriatric psychiatrist per 10,000 adults age 75 and over. This figure is estimated to decrease to 0.5 per 10,000 by the year 2030, underscoring the importance of increasing the knowledge base of clinicians across specialties who provide care to the depressed elderly [48]. The primary care setting is often the locus of care for depression in older adults; however, studies suggest that patients are often left untreated or undertreated [49]. Collaborative care models whereby mental health care is integrated into primary care have been shown to improve outcomes. The Prevention of Suicide in Primary Care Elderly: Collaborative Trial (PROSPECT) study found that use of care managers to assist primary care providers in identification of depression, offer algorithm-based treatment recommendations, monitor symptoms and medication side effects, and provide follow-up yielded improvement in outcomes. Patients in the intervention group were more likely to receive pharmacotherapy or psychotherapy, achieve remission, and showed greater decline in suicidal ideation [50]. Similar results were found in the Improving Mood-Promoting Access to Collaborative Treatment (IMPACT) study in which intervention patients treated under a collaborative care model showed lower depression severity, less functional impairment, and greater reduction in depressive symptoms [25].

Just as a collaborative care model can lead to improved outcomes, the overall strategy of treating depression must be multifaceted. The biopsychosocial model of disease first described in the 1970s emphasizes biological and psychosocial determinants of illness that must be addressed when treatment is considered [51]. This includes nonmodifiable biological factors such as age, gender, and genetic predisposition that may affect treatment options, as well as modifiable biological factors such as comorbid medical illness, medications, or substance use disorders. Psychological factors that can affect depressive symptoms include coping skills and defense mechanisms in the face of stressful life events. Social factors including the role of culture, environment, and family dynamics in disease presentation must be considered as well [52].

**Pharmacologic Treatment of LLD**

The primary pharmacologic treatment for depression is antidepressants. Treatment consists of 3 phases—acute, continuation, and maintenance. In the acute phase, the goal is remission of current symptoms and restoration of function. The continuation phase, extending up to 6 months after remission, aims to prevent relapse back into a depressive episode. Maintenance therapy is geared at preventing recurrence of future depressive episodes [53]. Studies have found a 50% risk of relapse after 1 episode of depression and 80% after 2 episodes. Up to 20% will develop chronic symptoms. For this reason, maintenance therapy is often necessary for recurrent depression [54].

Studies have demonstrated antidepressants to be superior to placebo in the treatment of geriatric depression. Table 3 summarizes commonly prescribed antidepressants and usual geriatric doses. A large meta-analysis of 51 double-blind randomized controlled trials with depressed patients age 55 and older without comorbid dementia found antidepressants to be superior to placebo in achieving both response (48%) and remission (33.7%) [55]. Response was defined as greater than 50% decrease on depression rating scales such as the Hamilton Depression Rating Scale (HAM-D) or the Montgomery Åsberg Depression Rating Scale (MADRS), both of which are considered gold standards in antidepressant clinical trials [56,57]. Remission was defined as a score less than 7 or 10 on the HAM-D (depending on the version used) or less than 12 on the MADRS. This study found no difference in response and remission rates between tricyclic antidepressants (TCAs), selective serotonin reuptake inhibitors (SSRIs), and other antidepressants (serotonin norepinephrine reuptake inhibitors [SNRIs], bupropion, mirtazapine, nefazodone, trazodone, and several other antidepressants
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not available in the United States) [55]. Similar results regarding efficacy were found by Mukai and Tampi in a systematic review comparing older patients with major depression prescribed SSRIs or dual-acting agents (SNRIs and TCAs). This study also found similar efficacy between single- and dual-acting antidepressants [58].

While cognitive impairment may affect antidepressant efficacy, age does not appear to be a determinant. Gildengers et al examined antidepressant response in young, middle, and older-old patients and found no significant difference in response rates [59]. Early onset versus late onset of first depressive episode also does not predict antidepressant response in patients age 55 and over [60]. There is scant evidence for efficacy of antidepressants in depressed patients with neurocognitive disorders. A 2002 Cochrane review with 4 studies in the meta-analysis (n = 137) concluded that there was weak support for antidepressant efficacy in this population [61]. A 2011 meta-analysis with 330 participants also yielded inconclusive results [62]. The paucity of evidence for antidepressant efficacy in depressed patients with neurocognitive disorders should prompt careful consideration of potential benefits versus adverse effects.

Antidepressants are generally well tolerated in older adults. Side effects vary by medication and contribute to discontinuation in up to 25% of new users (versus 22% for new users who discontinue for reasons other than side effects) [63]. Potential adverse effects shared by most SSRIs and SNRIs include GI disturbance (nausea, diarrhea or constipation), sexual dysfunction, headache, and sleep disturbance [64,65]. In addition, abrupt discontinuation can precipitate serotonin withdrawal syndrome characterized by sensory disturbance (paresthesia, tremor, and irritability) as well as headache, lightheadedness, diaphoresis, insomnia, and agitation. Other medication-specific side effects include risk of seizure with bupropion and sedation with mirtazapine [65].

Despite superiorit of antidepressants to placebo in treating depression, up to one-third of patients may not respond to a trial of antidepressants. Sequential treatment protocols such as switching to a different antidepressant or augmentation can increase the proportion of antidepressant responders [66–68]. Studies have found particularly favorable response to augmentation with lithium, with one study achieving a 33% remission rate in treatment-resistant geriatric depression [67,69]. Other pharmacologic augmentation strategies include the addition of mood stabilizers such as lamotrigine, antipsychotics (aripiprazole, olanzapine, quetiapine, and risperidone), and psycho-stimulants [70–73]. Electroconvulsive therapy (ECT) is a nonpharmacologic option for treatment-resistant depression that will be reviewed later.

Psychotherapeutic and Psychosocial Interventions

Psychotherapeutic interventions have demonstrated efficacy in the treatment of geriatric depression, including but

Table 3. Commonly Prescribed Antidepressants and Geriatric Dosing

<table>
<thead>
<tr>
<th>Class/Mechanism of Action</th>
<th>Agent</th>
<th>Geriatric Starting Dose</th>
<th>Target Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSRI</td>
<td>Citalopram</td>
<td>10 mg</td>
<td>20 mg</td>
</tr>
<tr>
<td></td>
<td>Escitalopram</td>
<td>5 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td></td>
<td>Fluoxetine</td>
<td>10 mg</td>
<td>40 mg</td>
</tr>
<tr>
<td></td>
<td>Paroxetine</td>
<td>10 mg</td>
<td>20–40 mg</td>
</tr>
<tr>
<td></td>
<td>Sertraline</td>
<td>25–50 mg</td>
<td>100–200 mg</td>
</tr>
<tr>
<td>SNRI</td>
<td>Desvenlafaxine</td>
<td>25 mg</td>
<td>50 mg</td>
</tr>
<tr>
<td></td>
<td>Duloxetine</td>
<td>20–40 mg</td>
<td>30–60 mg</td>
</tr>
<tr>
<td></td>
<td>Levomilnacipran</td>
<td>20 mg</td>
<td>40–120 mg</td>
</tr>
<tr>
<td></td>
<td>Venlafaxine XR</td>
<td>37.5–75 mg</td>
<td>150–225 mg</td>
</tr>
<tr>
<td>NDRI</td>
<td>Bupropion XL</td>
<td>150 mg</td>
<td>150–300 mg</td>
</tr>
<tr>
<td>SSRI + 5-HT partial agonist</td>
<td>Vilazodone</td>
<td>10 mg</td>
<td>40 mg</td>
</tr>
<tr>
<td>Central alpha 2 antagonist + 5-HT antagonist</td>
<td>Mirtazapine</td>
<td>7.5 mg</td>
<td>15–45 mg</td>
</tr>
<tr>
<td>SSRI + 5-HT agonist and antagonist</td>
<td>Vortioxetine</td>
<td>5 mg</td>
<td>20 mg</td>
</tr>
</tbody>
</table>

5-HT = 5-hydroxytryptamine (serotonin) NDRI = norepinephrine dopamine reuptake inhibitor; SNRI = serotonin norepinephrine reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor. Data from reference 65.
not limited to cognitive behavioral therapy (CBT), interpersonal therapy (IPT), problem-solving therapy (PST), reminiscence and life review, and brief psychodynamic psychotherapy [74]. Some older adults may prefer psychotherapy to pharmacologic treatment (57% vs. 43%) [75]. Potential benefits of psychotherapy include ability to directly address psychosocial stressors that may precipitate or perpetuate depressive symptoms. In addition, psychotherapy is associated with few to no side effects and avoids drug interactions. Barriers to employing psychotherapy may include cost and access to trained psychotherapists [76]. Efficacy of several psychotherapeutic approaches in the care of older depressed adults has been examined. CBT, brief psychodynamic psychotherapy, and IPT will be briefly reviewed here.

**CBT.** Cognitive therapy was first described by Aaron Beck in the 1960s [77]. It is a highly structured therapy built on the premise that beliefs and assumptions an individual holds can influence emotions and behavior. CBT aims to identify maladaptive belief systems, test the validity of these cognitive distortions, and help individuals formulate more realistic cognitions [78]. Symptom improvement results from addressing these cognitive aspects as well as integration of behavioral activation and skills training to overcome maladaptive behavioral patterns [78]. CBT approaches have been applied to older adults with depression and results show acceptability [79] and efficacy in this population [80–82]. A 2008 Cochrane review (n = 153) found CBT to be superior to waitlist controls [82].

**Brief psychodynamic psychotherapy.** Brief psychodynamic psychotherapy, unlike highly structured CBT, aims to alter behavior by examining how past experiences and unresolved conflicts influence current emotions and behavior. While studies on application to the treatment of geriatric depression are scarce, limited data demonstrate efficacy in treating geriatric depression [81] and no significant difference in outcomes when compared to CBT [82].

**IPT.** Like CBT, IPT is a structured time-limited psychotherapeutic treatment approach first developed in the late 1960s by Klerman and Weissman [83]. IPT focuses on the impact of interpersonal relationships on depressive symptoms and examines 4 domains: interpersonal conflict, interpersonal deficits, role transitions, and grief [74].

Studies have shown efficacy of IPT in reducing depressive symptoms in the elderly when compared to usual care [84]. Reynolds et al found IPT combined with nortriptyline (a tricyclic antidepressant) to be superior to either nortriptyline alone or IPT alone in preventing recurrent depressive episodes [85]. Interestingly, a similar study investigating the efficacy of IPT in combination with paroxetine (an SSRI) failed to show added benefit of IPT in preventing recurrence, suggesting that further studies are needed [86].

Psychosocial interventions are integral in the care of the elderly depressed patient. Studies have shown positive benefits of aerobic exercise on depressive symptoms [87]. Yoga, Tai Chi, and other mindfulness-based exercises can increase sense of emotional and physical wellbeing [88–90]. Spirituality, religious beliefs, and involvement with a faith group may be protective against development of mental illness while at the same time provide avenues for increased social connectedness [91]. These and other avenues for socialization should be encouraged as part of the treatment plan for older depressed patients [92].

**Electroconvulsive Therapy**

ECT is indicated for the treatment of mood and psychotic disorders and has demonstrated efficacy in the treatment of severe depression [93]. It is typically initiated when patients fail to respond to pharmacotherapy and psychotherapy. Circumstances in which ECT can be considered first-line treatment include situations that require a rapid response (severe inanition, weight loss, or suicidality), situations where risks of ECT are lower than that of alternative treatments, previous positive response to ECT, or strong patient preference [94]. ECT is performed under general anesthesia and involves the induction of a generalized tonic-clonic seizure, which is theorized to enhance serotonergic, noradrenergic, and dopaminergic neurotransmission. A typical course of ECT involves treatments 3 times a week for an average of 6 to 12 treatments in total [95]. Elderly patients and those suffering from severe depression with psychotic features respond more robustly to ECT [93,96]. Estimated remission rates after an ECT series have been higher than 80% [93], making this modality the most effective treatment for severe depression to date.

**Conclusion**

As the population continues to age, clinicians are increasingly likely to encounter patients with late-life depression.
A thorough evaluation includes not only assessment of depressive symptoms, but also cognitive, functional, and suicide assessment. Treatment options include pharmacotherapy, psychotherapy, and in some cases electroconvulsive therapy. Utilization of assessment and treatment nuances unique to the geriatric population, with a multidisciplinary and collaborative approach involving primary care, mental health, and other ancillary providers, will serve to ultimately enhance patient care.

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