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The aim of this review is to highlight the need for treating late-life depression in primary care settings, review obstacles to doing so and introduce evidence-based models of depression care for older primary care patients. While interventions focusing on depression screening, provider education and referral to mental health specialists have had only limited success, several recent trials have demonstrated that programs in which primary care providers and mental health professionals effectively collaborate to treat depression using evidence-based treatment algorithms are more effective than usual care. Future research should address the problem of persistent depression, which has been identified in recent collaborative care studies, and focus on how to translate evidence-based approaches for late-life depression treatment into real world practice.

The case for treating late-life depression in primary care

Late-life depression is a serious public health concern. Yet, despite increased attention in the past decade, many depressed older adults continue to be underdiagnosed and undertreated, and outcomes of usual care for depression are often poor.

The low levels of major depression identified in studies of community-dwelling older adults (1–2%) may give the impression that older adults are not at significant risk of depression [1]. However, the prevalence of depression increases significantly in older adults as their physical health declines and their autonomy decreases. Comorbid medical illnesses are among a number of barriers that make it difficult for depressed older adults to receive effective depression treatment from their primary care physicians. Depression rates in older adults seen in primary care settings range between 5 and 10% [2]. The burden of depression in older adults is evident in the association between depression and increased healthcare costs [3,4], adverse medical outcomes for conditions such as hip fracture [5] and stroke [6], declines in general physical functioning [7,8] and even mortality [9]. Finally, older adults with depression have a harder time adhering to complex treatment regimens for chronic medical disorders and depression can be a major barrier to effective disease management.

In older adults, depression is often underdiagnosed due to the complex relationship between physical symptoms common in aging and symptoms of depression such as sleep disturbance, appetite change and loss of energy. Confounding the overlap between physical symptoms and depression can be a tendency for older adults to minimize reporting of depressed mood, which is the hallmark of depression [10]. Compounding the problem further, many clinicians may not assess for anhedonia (loss of interest and pleasure), the second cardinal symptom of depression. Hence, 'depression' in late life is a complex disorder that may present quite differently from depression in early and mid life [11].

Primary care represents a healthcare setting in which mental health concerns such as depression have strong influence over patient wellbeing, both through direct effects on mental wellbeing and indirect effects through chronic illness. However, it is not just the overlap with chronic medical illness that makes primary care an attractive venue for treating depression in older adults. Primary care is also an excellent setting for depression treatment because many older adults strongly prefer to receive this treatment in primary care settings. Conversely, few older adults seek and receive depression treatment from a mental health specialist [12,13], even if referred by their primary care provider [14].

Fortunately, there has been increased attention directed to the problem of late-life depression over the past decade and significant improvements have been made in developing models of care for treatment [15]. Throughout the 1990s professional and governmental organizations published guidelines for treating depression in primary care [4,16]. During this time, several classes of newer antidepressant medications (such as selective serotonin-reuptake inhibitors and norepinephrine serotonin-reuptake inhibitors) were developed that offered primary care providers effective treatments

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with fewer side effects than older antidepressants. This is particularly important when treating older adults, who are often more sensitive to medication side effects and who are more likely to be receiving multiple medications, increasing the risk of medication interactions. However, despite advances in treatment methods and the development of treatment guidelines for depression in primary care, it has not yet proven to be an effective venue for treating late-life depression [17,18]. In most studies, clinical outcomes of depressed older adults treated in primary care settings are poor. Findings indicate that patients are often underdiagnosed, underdosed with antidepressant medications or not followed closely enough to prevent early dropout or to adjust treatment in response to poor progress [14,19,20].

Obstacles to treating late-life depression in primary care

Several factors make treating late-life depression more challenging than treating depression in younger adults. As mentioned above, older adults presenting to primary care physicians tend to have one or more chronic medical conditions that can complicate the diagnosis and treatment of depression. As a result, they may be taking multiple medications, some of which can cause or exacerbate depression. Diagnosing and assessing depression in primary care requires effective communication with the patient, but depressed older adults may have difficulty focusing their attention and engaging in the treatment process, which can make primary care encounters with depressed patients long and ineffective. Adding to this challenge is the fact that depression continues to be a stigmatized mental health condition, which can make it difficult for patients and primary care practitioners to discuss the problem effectively [21]. Finally, the course of depression in older adults is more likely to follow a pattern of chronic rather than acute illness, which is different from many cases of depression in younger adults.

Models of care: enhancing current treatment

Screening for depression

Early attempts to address the unmet need for depression treatment through primary care focused on screening programs to identify depressed patients [22,23]. These studies were only partially successful, in that they did yield increases in the detection of depression. However, there is no reported evidence that screening and identification of depression alone actually leads to better health outcomes [24,25]. Hence, while effective case finding and diagnosis may be necessary to improve the treatment of depression in primary care, these strategies are not sufficient.

Enhanced education of providers

With substantial evidence that effective medications exist for treating late-life depression [26,27], that it is possible to identify and diagnose depression in primary care and that most treatment for late-life depression occurs in primary care, the question becomes how to improve treatment outcomes in this setting? A barrier from the provider side of the equation is that many primary care physicians may not feel that they are adequately prepared for this task. In fact, survey data indicate that a minority of internal medicine residents felt 'very prepared' to diagnose and treat depression in an outpatient setting [21]. Attempts to enhance provider knowledge, skills and confidence have produced mixed results, with most studies of provider education showing some impact on knowledge and confidence, but little to no improvement in depression treatment outcomes for their patients [28–31]. As with screening, provider education is likely to be a necessary component, but not sufficient to improve outcomes for most depressed older adults.

Referring to mental health specialty care

Research on the treatment of late-life depression suggests that medication and counseling-based treatments delivered by mental health specialists, such as psychiatrists and psychologists, can be significantly more effective than placebo [26,27]. This may lead one to think that the most obvious strategy for improving depression treatment for older primary care patients would be to simply refer the patient to a mental health specialist. In the real world, this strategy can be difficult to implement. Primary care providers are often concerned regarding poor access to mental health consultation or poor communication from consulting specialists [32,33], and many depressed older adults do not appreciate a referral to a mental health specialist. Evidence indicates that only a third to a half of patients will follow through on a referral to a mental health specialist [34–36].

Improving access to mental health specialists

We will now discuss four recent approaches to improving late-life depression outcomes that all involve substantial modifications to usual

treatment. These approaches include efforts to improve case identification and provider education, while simultaneously expanding the capacity of the primary care team to treat depression in important ways.

Improving access to mental health specialty care

Early efforts attempting to improve outcomes for late-life depression by case finding and referral to mental health specialists were not significantly more effective than usual care [37]. A more recent multisite treatment trial, the Primary care Research In Substance abuse and Mental health for Elderly (PRISM-E) study compared two models for improving access to mental health specialists: integrated care (internal referral) and enhanced external referral [38]. Patients in this study met criteria for depression, anxiety or at-risk alcohol consumption. The integrated care model attempted to overcome referral barriers by locating mental health specialty providers within a primary care clinic so there was no distinction between location of primary care and mental health specialty services. The integrated care program utilized licensed mental health specialty teams that included a psychiatrist and aimed to reduce treatment delays by providing quick (2–4-week) appointment opportunities. The enhanced 'external' referral method relied on 'outside' providers but, similar to integrated care, aimed for quick appointment times (2–4 weeks) plus assistance with transportation and systematic follow-up with patients. As with integrated care, the enhanced referral provider teams consisted of licensed mental health professionals capable of addressing a broad range of mental health disorders.

Outcomes from the PRISM-E trial indicate that increased access to mental health specialists was achieved (75 vs 52% in integrated and enhanced referral, respectively). While depression response rates were similar for both approaches, they were only slightly better than typical usual care outcomes of 20–30% of patients reaching at least a 50% reduction in depression symptoms [39]. When comparing remission rates between the two approaches, there was no significant difference (29 vs 37%) for integrated and enhanced referral, respectively [40]. Unfortunately, because there was no usual care control arm in the PRISM-E study, it is impossible to draw conclusions regarding the effectiveness of the two models relative to usual care.

Collaborative care for depression

In the past 10 years, more than 30 studies in the USA and Europe have tested various models of care that improve collaboration between mental health specialists and primary care providers [41–43]. These models, collectively referred to as 'collaborative care' programs, follow principles of effective chronic illness care identified for other chronic medical disorders [44,45]. Effective collaborative care programs have various combinations of the following 'core components':

- Utilization of nonphysician providers (sometimes referred to as Depression Care Managers) to support primary care providers treating depression;
- Education of patients and providers regarding effective depression treatment, focusing on evidence-based treatments for depression;
- Ongoing monitoring (usually by a care manager) of depression symptoms and patient response to treatment with notification to the treating primary care physician if patients are not improving as expected;
- Support of the treatment team by a mental health specialist (usually a psychiatrist) who can provide focused advice on the care of patients who are not responding to treatment as expected.

In some (but not all) programs, depression care managers provide brief psychosocial treatments, such as interpersonal psychotherapy or problem-solving treatment in primary care, and more recent collaborative care programs subscribe to a stepped care approach in which less resource-intensive approaches to treatment (e.g., an antidepressant prescription from a primary care provider) are applied initially and additional resources (e.g., brief evidence-based psychotherapy or psychiatric consultation) are added to the treatment plan if depression fails to respond to initial treatments.

Studies of collaborative care for depression have been conducted in a wide range of healthcare systems, treating varied adult populations. We will review three programs that have been tested with older primary care patients in the USA (Box 1).

Re-Engineering Systems for Primary Care Treatment of Depression

Although not specifically aimed at older adults, one of the largest studies to date that included older adults is the Re-Engineering Systems for Primary Care Treatment of Depression (RESPECT-D) project. In this model, care

Box 1. Evaluating models of collaborative care.

Common elements

- Depression care managers who monitor progress and coordinate care
- Education of patients to promote active self-care and treatment participation
- Education of providers on most current evidence-based practices
- Ongoing monitoring of depression symptoms and assertive treatment planning
- Mental health specialists act as consultants to treatment team using treatment algorithms
- Frequent communication between patient, care managers and providers

Unique elements

Re-Engineering Systems for Primary Care Treatment of Depression (RESPECT-D)

- Included adults of all ages
- Randomization occurred at the practice level, not the provider level
- Contact with care managers by telephone only
- Psychiatric supervision by telephone only
- Counseling modality offered was supportive

PRevention Of Suicide in Primary care Elderly: Collaborative Trial (PROSPECT)

- Contact with care managers was face-to-face only
- Psychiatric supervision was face-to-face only
- Counseling modality offered was interpersonal therapy

Improving Mood: Promoting Access to Collaborative Treatment (IMPACT)

- Contact with care managers was both face-to-face and by telephone
- Psychiatric supervision was both face-to-face and by telephone
- Counseling modality offered was problem-solving treatment

manager contact with patients and providers occurred over the telephone. Participating practices were randomly assigned to provide treatment as usual or to implement the RESPECT-D model for treatment. Outcomes indicated that RESPECT-D patients with major depression and dysthymia experienced significantly greater response to treatment at 3 and 6 months (53 vs 34% and 60 vs 47%, respectively). Remission rates were also significantly better for RESPECT-D patients at 3 and 6 months (26 vs 16% and 37 vs 28%, respectively) [46]. As mentioned, this study included adults of all ages, and the authors do not report any differences in outcome associated with age.

The outcomes in RESPECT-D illustrate that collaborative efforts in primary care can yield better outcomes than treatment as usual in a primary care setting, even when older adults are included in the patient pool. Note that the response rates are still in the 50–60% range and full remission is in the 26–36% range, indicating that a substantial number of patients do not experience complete relief of their depressive symptoms, even when treatment is significantly enhanced. Based on the initial success of the trial, the RESPECT-D model is currently being disseminated in several healthcare organizations around the country [101].

PRevention Of Suicide in Primary care Elderly: Collaborative Trial

The PRevention Of Suicide in Primary care Elderly: Collaborative Trial (PROSPECT) tested the hypothesis that effectively treating late-life depression would lead to reduced risk for suicide in older adults. This multisite study brought together National Institutes of Mental Health funded centers for late-life mood disorder intervention research residing at the Universities of Pittsburgh and Pennsylvania (PA, USA) and Cornell University (NY, USA). Citalopram, a commonly used antidepressant medication, was offered to PROSPECT participants for free as the first line of treatment. Interpersonal psychotherapy provided by the care managers based in primary care clinics was available as a secondary approach and primary care physicians were briefed on treatment guidelines provided by the Agency for Health Care Policy and Research [16]. PROSPECT enrolled older primary care patients who had major depression, dysthymia or minor depression and participating primary care practices were randomly assigned to intervention or usual treatment. Study outcomes indicate that patients in PROSPECT clinics had a greater reduction in their depression symptoms [47] and these reductions occurred more quickly than patients given usual treatment [48]. Treatment response at 4, 8 and 12 months was more likely to occur in intervention than in usual care control patients, but remission was only more likely at 4 and 8 months [49]. As hypothesized, participants in the PROSPECT intervention reported a greater decrease in suicide ideation than did the usual treatment group. The PROSPECT trial represents an important contribution towards efforts to reduce the risk of suicide in older adults, demonstrating that effectively treating depression can reduce suicide ideation.

Improving Mood: Promoting Access to Collaborative Treatment

In the Improving Mood: Promoting Access to Collaborative Treatment (IMPACT) trial, 1801 depressed older adults from 18 primary care clinics belonging to eight diverse healthcare organizations in five states were randomly assigned to usual primary care or to a

collaborative stepped care program for late-life depression [39]. Participants met Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, criteria for major depression and/or dysthymia [50]. This collaborative care program was based on previous, successful collaborative care programs [51,52] with special emphasis placed on elements aimed to enhance care for older adults [53]. Intervention patients had access to the depression care manager for 12 months, and clinical outcomes were independently assessed for intervention and usual care patients over 24 months. Results of the IMPACT study indicate that access to the IMPACT care program more than doubled the likelihood that a patient would experience a 50% reduction in his or her depression symptoms as compared with usual care [39]. At the 12-month evaluation, only 19% of the patients in usual primary care experienced a 50% reduction in their depression symptoms, compared with 45% of the IMPACT participants. These outcomes were consistent across all eight participating healthcare organizations [39,54], suggesting that the model is 'robust' to diverse primary care population and clinic settings, a critical component for the implementation of such a program after a successful research trial (Figure 1). The better depression response in intervention patients was observed in white patients and in patients from ethnic minority groups [55], in men and women [39], and in older adults with or without comorbid chronic medical illness [56]. At the 24-month follow-up, a year after the end of the intervention, IMPACT participants continued to have significantly lower depression, less functional impairment, better quality of life and better physical functioning than those in usual care [57]. As in the PROSPECT trial, IMPACT participants also reported lower rates of suicidal ideation than those in usual care [58]. Cost-effectiveness analyses suggest that IMPACT care is not only more effective but also more cost-effective than usual care over a 24-month follow-up period [59,60].

Comparing the models

The treatment models reviewed here all shared common elements of 'collaborative care', including dedicated depression care managers who served as the hub of the care team. However, effectiveness trials are intended to test interventions in the real world setting in which they will ultimately be delivered and consequently each study will entail unique treatment elements. For instance, in RESPECT-D, contact between care managers and patients occurred on the telephone, while IMPACT care managers carried out both in-person and telephone contacts. In PROSPECT, the first-line medication was always citalopram, and was offered free of charge, whereas in IMPACT the providers determined the medications used according to their preferences, and patients were responsible for paying for all medications. Differences such as these in treatment setting and protocol, along with differences in outcome measurement process, make direct comparison among these studies difficult, yet the general results across the trials were improved treatment outcomes. These findings are consistent with a recent meta-analysis of 37 collaborative care trials for depression that conclude that this approach is consistently better than usual care [61].

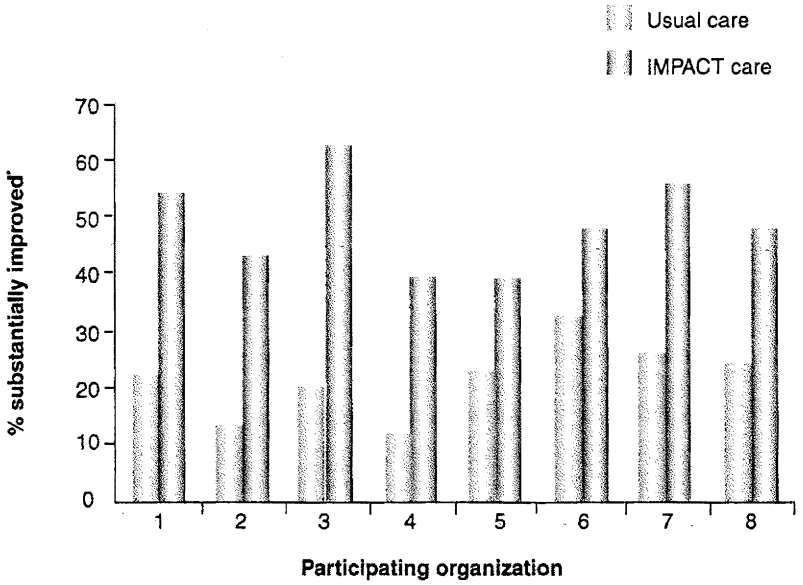
Lessons learned

To summarize the evidence available to date, screening for depression in primary care settings may increase the detection of depression but does not yield better outcomes. Likewise, targeted education programs for physicians do not consistently yield better depression outcomes. The traditional model of referring depressed older adults to mental health specialists can be improved and such efforts yield increased levels of treatment, but the existing research does not allow us to determine if this approach is significantly more effective than usual primary care for depression. At this point, the strongest evidence for effective treatment of depression in older primary care patients comes from three large trials of collaborative care programs (RESPECT-D, PROSPECT and IMPACT). These programs share several core elements, such as: systematic efforts to improve patient education; utilizing clinical staff as depression care managers, who routinely assess and follow patient status and support treatment prescribed by the patient's primary care providers; and psychiatric consultants, who regularly meet with the depression care managers and can help support a stepped care treatment philosophy that can increase treatment resources as clinically indicated.

Future perspective

Until the most recent effectiveness studies, such as the ones reviewed here, we knew that treatments for depression worked in highly controlled 'laboratory' settings [26,27]. Current research

Figure 1. Findings from IMPACT robust across diverse healthcare organizations.



*≥50% reduction in depression from baseline at 12 months.
IMPACT: Improving Mood: Promoting Access to Collaborative Treatment trial.
Reprinted from [54] with permission from *Psychiatric Clinics of North America*.

has taught us that these treatments are also effective when delivered systematically by a collaborative care program deployed in 'real world' primary care clinics. More recent work also suggests such evidence-based collaborative care models can remain effective and even cost-effective when adapted by large, real-world healthcare organizations outside of a formal effectiveness study [62].

Such effectiveness studies have brought us one step closer to making major advances in the treatment of late-life depression available to large populations of older adults.

Future research should investigate program adaptations needed to improve depression outcomes in the substantial number of older adults who continue to have significant residual depression symptoms even with current state-of-the-art collaborative care programs. For example, secondary analyses of the PROSPECT study have identified clinically relevant predictors of poor treatment outcomes, namely limitations in physical and emotional functioning, hopelessness and anxiety [48]. As discussed, treatment of late-life depression is subject to unique barriers and more research is needed to determine the effectiveness of programs aimed at treating adult depression in general verses late-life depression in particular. Furthermore, these studies do not address the needs of older adults whose depression is comorbid with other mental disorders, such as bipolar disorder, or who have high levels of comorbidity, as in cases of severe cognitive impairment.

Although initial efforts to disseminate evidence-based collaborative care programs beyond the original research are promising [54,101,102], more research is also necessary to determine what is needed to successfully 'translate' evidence-based programs of late-life depression care to most primary care settings.

Information resources

- IMPACT Intervention Center: experienced staff committed to assist in implementing collaborative care for late-life depression. www.impact-uw.org
- Macarthur Initiative on Depression & Primary Care at Dartmouth and Duke: extensive written manuals and protocols for re-engineering a primary care practice to effectively treat depression. www.depression-primarycare.org
- RAND Corporation's Partners in Care: excellent summaries of research findings and current clinical tools for quality improvement in primary care. www.rand.org/health/projects/pic/
- Blazer DG: *Depression in Late Life*. Springer, NY, USA (2002). A comprehensive 'manual' on late life depression theory and practice.

Executive summary

The case for treating late-life depression in primary care

- Older adults prefer to receive mental health treatment in primary care.
- Effective medications and brief psychotherapy methods exist for treating late-life depression in the context of primary care.

Obstacles to treating late-life depression in primary care

- Identification and treatment of late-life depression is complicated by comorbid illness.
- Primary care physicians have limited access to mental health specialists.
- Many physicians feel unprepared to treat depression in older adults.
- Without systematic support, treating depression can overburden busy primary care providers.

Models of care: enhancing usual treatment

- Usual treatment fails to identify and effectively treat most depressed older adults.
- Numerous models for enhancing treatment have been developed and demonstrate that it is possible to improve outcomes.
- Efforts focusing on screening for depression, provider education and referral to mental health specialists have not consistently improved health outcomes for depressed older adults.

Systematic approaches to improving care

- There is no single silver bullet for improving depression outcomes; a systematic approach to changing primary care practice for depressed older adults is likely necessary to achieve significant improvements.
- The course of late-life depression is more of a chronic illness than an acute illness and hence requires a shift in traditional approaches to treating this illness.
- Patients should be educated on the nature of their illness and its treatment.
- Providers should be educated on diagnosis, medication dosing, comorbidity and treatment planning specifically for late-life depression.
- Symptoms of depression should be closely monitored over time and used to inform treatment planning.

Better treatment yields improved outcomes

- Effective programs vary significantly but, as with collaborative care for depression in young and mid-life adults, collaborative care for late-life depression can reduce symptoms more quickly in more patients than usual treatment.
- Improvements in depression care are associated with reductions in suicide ideation.
- Effective treatment of depression can lead to better physical functioning and better overall quality of life.
- Evidence-based collaborative care is more cost-effective than usual care for late-life depression.

Summary

- Late-life depression can be effectively treated in primary care settings by developing collaborative teams of educated patients, providers, depression care managers and psychiatric consultants that can facilitate the systematic application of evidence-based treatments for late-life depression.

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