The Role of Algorithms in the Detection and Treatment of Depression in Primary Care

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Many depressed patients present to primary care physicians instead of psychiatrists, and several studies have found that primary care physicians underdiagnose and undertreat depression. Primary care physicians may fail to diagnose and treat depression for many reasons: depression as it appears in primary care is in many ways a different disease than that seen in the psychiatric setting, and the process of detecting and treating it is different as well. Primary care clinicians face 2 main tasks when addressing depression in routine practice: to accurately identify those patients who are most likely to benefit from antidepressant treatment and to provide the best treatment options possible in the limited time available per visit. Treatment algorithms can be useful, but they are often difficult to apply in primary care. This article reviews the evidence about the detection and treatment of depression in primary care, examines current research on the differences between the primary and specialty care environments, and discusses aspects of treatment guidelines and algorithms that are important to primary care physicians. *(J Clin Psychiatry 2003;64[suppl 2]:19–23)*

Many depressed patients present to primary care physicians instead of psychiatrists, and several studies[1–7] have found that primary care physicians underdiagnose and undertreat depression. Although many primary care physicians undoubtedly need guidance in detecting and treating depression, psychiatrists must also realize that primary care physicians "miss" depression for numerous valid reasons. Depression as it appears in the primary care setting is in many ways a different disorder than that seen in the psychiatric setting, and the process of detecting and treating it is different as well.

Primary care clinicians must accomplish 2 main tasks when treating depression: to accurately identify those patients who are most likely to benefit from antidepressant treatment and to provide the best treatment options possible in the limited time available per visit. Treatment algorithms can be useful in primary care, particularly for those patients with classic presentations of depressive disorder and no comorbid illnesses. However, many primary care patients do not have clearly identifiable symptoms, fail to reach threshold diagnostic criteria for major depressive disorder (MDD), do not accept the diagnosis, or have multiple medical and mental health comorbidities that compete for clinical attention; each of these factors makes reaching the entry point for algorithms difficult, i.e., a clear-cut psychiatric diagnosis. Moreover, algorithm-defined treatment focuses on the specific disorder, making it the primary target of treatment, but in many cases other health problems or issues may take priority over diagnosing and treating depression.

DIAGNOSING DEPRESSION IN PRIMARY CARE

The commonly repeated statement that major depressive disorder is underdiagnosed and undertreated in the primary care setting is supported by several well-designed studies.[1–7] In the Medical Outcomes Study,[1] practice attendees were screened with a brief psychosocial questionnaire. Those who screened positive for depression were then confirmed by a diagnostic assessment that was compared with the clinician's perception of whether the patient was depressed. A finding of depression both on the diagnostic assessment and by clinician perception signified "detection." Detection rates were found to be significantly lower in primary care settings than in mental health settings. Several other studies in the 1980s and early 1990s employed similar methods to assess primary care detection rates, with estimates ranging from above 60% to below 30%.

A second wave of studies[8,9] looked at the intensity of treatment received by detected, depressed primary care patients. In a study by Katon et al.[8] examining the impact of psychiatric intervention on depressed "high-utilizing"

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primary care patients, 47% were determined to be in need of antidepressant medication by the consulting psychiatrist. However, only 11% had received an adequate dose and duration of medication in the year prior to the intervention, and the majority of patients did not adhere to the prescribed antidepressant treatment even after the psychiatric intervention. In a subsequent study, Lin and colleagues[9] found that 28% of primary care patients newly prescribed antidepressant medications for depression had stopped taking them in the first month of therapy. The dual message taken from these and other studies was that depression is underrecognized and undertreated in primary care and that treatment does not necessarily improve with enhanced detection. However, this message must be tempered by mounting evidence that the type of depression seen in the primary care setting is different than that seen in psychiatric settings and may require different management strategies.

Differences in the Types of Depressive Disorders Seen in Primary Care and Psychiatry

Many factors complicate the diagnosis and treatment of depression in primary care. First and foremost is that depression seen in primary care is in many ways a different clinical entity than the depression seen in psychiatry. It is often less severe and less impairing, and primary care physicians rely on different cues than do psychiatrists when making the diagnosis. For example, Simon and VonKorff[10] studied 373 primary care patients who completed a baseline psychiatric assessment and were followed up at 3 months and 12 months. Of 64 patients with major depression confirmed by psychiatric assessment, 41 (64%) were recognized by the treating physician as psychologically distressed. Those who were not recognized as distressed were less symptomatic at baseline, yet still improved over the 12-month study period, and unrecognized depressed patients improved at a rate similar to that in recognized patients. Moreover, these depressed primary care patients had, in general, a less severe form of depression than that seen in psychiatric patients, and their depression often spontaneously improved or resolved over the 12-month follow-up.

The Michigan Depression Project (MDP)[11–15] is a long-term study of depression in primary care that has provided valuable data regarding the similarities and differences between depressed patients in primary care and psychiatry and whether the same treatment is appropriate in both settings. In its first phase, the MDP screened 1928 adult patients from the practices of 50 family physicians in southeast Michigan and completed structured diagnostic interviews on 425 distressed primary care patients and 123 depressed psychiatric outpatients using the Structured Clinical Interview for DSM-III-R (SCID). Clinicians were asked independently whether each of the patients was clinically depressed. The full sample received comprehensive assessments of stress, social support, overall health, health care utilization, and depression severity at intake and at 4.5 and 9 months after enrollment.

Of the 425 distressed primary care patients, 13.5% were diagnosed with major depression and 22.6% with any depressive disorder, but over 40% of those meeting criteria for MDD were only mildly depressed.[12] Many of the primary care patients with mild or moderate depression were not diagnosed; family physicians only diagnosed 35% of patients with MDD and 28% of patients with any depressive disorder.[14] However, the detection rate for severely depressed patients was significantly higher; 73% of severely depressed patients were detected compared with 18.4% of mildly depressed patients.[14] It appears that the primary care physicians in the MDP relied heavily on level of impairment when diagnosing depression, reserving use of the label "depression" for clinical circumstances that they saw as warranting intervention. This is consistent with other primary care studies.[16]

The Michigan Depression Project also illuminated several differences in the clinical epidemiology of depression between primary care and psychiatry. Depressive episodes in primary care patients were more likely to be associated with recent stressful life events, while episodes in psychiatric patients were unrelated to life events.[11] Primary care physicians were more likely to rely on historical cues, such as history of depression and degree of impairment, when making a diagnosis of depression. Most importantly, outcomes for detected depressed primary care patients were similar to those seen for both undetected depressed primary care patients and depressed psychiatric patients.[15] No differences were found between the 2 primary care groups at 4.5 months, and by 9 months, most patients in all groups no longer met diagnostic criteria for MDD. However, the detected depressed patients showed the least amount of improvement over the study period. These curious and somewhat counterintuitive findings lead to the important point that medical and psychiatric comorbidity have a major impact on the incidence, detection, treatment, and outcome of depressive episodes and that medical and psychiatric comorbidity differ significantly between primary care and psychiatric settings.

The Problem of Comorbidity

Comorbidity is remarkably common among depressed primary care patients. In the PRIME-MD 1000 study,[17] over one half of patients with a psychiatric diagnosis had more than 1 psychiatric disorder, and almost one third had 3 or more. Sixty-five percent of patients with a mood disorder such as depression were also diagnosed with an anxiety or somatoform disorder or alcohol abuse. Eighty-two percent of the 1000 patients assessed had at least 1 comorbid medical problem: almost half had hypertension, 23% had arthritis, 17% had diabetes, and 15% had cardiac disease. The presence of comorbid medical and psychiatric

problems makes diagnosis and treatment difficult in at least 2 ways. First, the somatic symptoms used as diagnostic criteria for depressive disorder in DSM-IV are far less specific and useful in primary care patients who have other health problems. Second, the presence of other health problems creates competing demands for the time and attention of primary care physicians during clinical encounters.

The Problem of Somatic Symptoms

The association between nonspecific somatic symptoms such as pain, fatigue, or sleep problems and depression has long been known, and somatic symptoms are a core part of current diagnostic criteria for depressive disorders. Most depressed primary care patients do not present for care with the complaint of "depression" but with complaints centered on these ill-defined somatic symptoms. Data from the Epidemiologic Catchment Area (ECA) study[18] confirmed that among respondents with 5 or more somatic symptoms, 63% reported psychological symptoms and 50% met criteria for a DSM-III psychiatric disorder. However, the prevalence of each of the somatic symptoms used to diagnose MDD approaches 20% in nondepressed primary care patients,[11] making the predictive value of somatic symptoms much lower in the primary care setting than in the psychiatric setting. Moreover, in light of the higher prevalence of medical comorbidity in primary care, somatic symptoms are more likely to point to an underlying medical problem. This means that the evaluation of somatic symptoms in primary care requires both a broad lens and time, which can delay the diagnosis of depression when it presents in the form of somatic symptoms.

In many cases, somatic symptoms can point to both medical disease and psychiatric disorder; the high prevalence of depression in patients with cardiac disease and diabetes is well known, and fatigue and sleep problems are common to all 3 conditions. Even when physician and patient agree on the diagnosis of depression, they may also agree that a coexisting physical problem should be the primary focus of treatment.

Other Barriers to Detecting and Treating Depression

Since many of the depressed patients seen in primary care are only mildly depressed, they may resist treatment even if they accept the diagnosis. Physicians may in turn hesitate to officially diagnose these patients, choosing instead a "wait-and-see" philosophy. This philosophy, as the Michigan Depression Project[11–15] showed, may be an effective method of managing minor depression. Another factor that may contribute to the seemingly low rate of detection in primary care is the stigma still attached to a diagnosis of depression or any psychiatric disorder. Patients who present with somatic symptoms may fail to connect them to psychological distress or a psychiatric disorder. Even patients who recognize this connection may reject their doctor's diagnosis of depression and treatment recommendations, and in turn their doctor may decide to postpone recording the diagnosis until it is accepted by the patient and treatment is initiated. In some circumstances, primary care physicians are not reimbursed by third party payers for office visits that carry only psychiatric diagnoses or are reimbursed at lower rates for psychiatric diagnoses than for medical diagnoses. The end result in many of these situations is that physicians may deliberately misdiagnose or fail to diagnose depression even as they recognize and begin to treat it.[19] Finally, sustaining treatment for depression can be much more difficult in primary care in the presence of multiple health problems and competing demands that unfold over time than in the psychiatric setting where it is the sole focus of a limited doctor-patient relationship.

TREATING DEPRESSION IN PRIMARY CARE

Acute-Care Strategies

Several recent clinical trials aimed at improving primary care treatment of depression have focused on altering the practice environment to improve care, rather than altering the behavior of the physician or patient, and the short-term results look promising.

Katon and colleagues[20] explored the effectiveness of collaborative care in a group-model health maintenance organization. Primary care patients who were recognized as depressed were randomly assigned to either treatment as usual or an intervention program in which patients had 2 visits with their primary care physician and 2 visits with a psychiatrist in the first 4 to 6 weeks of treatment. Patients in the intervention group also received printed materials and videotapes about depression and its treatment. Of the 217 participating patients, 91 met criteria for major depression and 126 met criteria for minor depression. Patients with either major depression or minor depression who received the intervention were significantly more likely to receive adequate antidepressant treatment; 75% of intervention patients received an adequate dose for at least 90 days compared with 50% of patients in the treatment-as-usual group ($p < .01$). Significantly more major depression patients in the intervention group were satisfied with the care they received, rating it good to excellent, than were those in the control group (93% vs. 75%, $p < .03$), but among patients with minor depression, the 2 treatment groups did not differ on this measure (94.4% vs. 89.3%, ($p = .30$). Finally, major depression patients in the intervention group were more likely to improve by 50% or more at 4-month follow-up compared with those who received treatment as usual (74% vs. 44%, $p < .01$), but no difference in outcome was seen in the minor depression group. More than 80% of the participating primary care physicians reported that this intervention greatly increased their own satisfaction in treating depression. However, the authors also reported that by 1-year post-intervention, the processes

and outcomes of care for depression at the intervention site had reverted to baseline levels, raising major questions about the sustainability of the intervention.

Hunkeler and colleagues[21] examined the effect of nurse telehealth care on response and adherence to antidepressant treatment in primary care. Three hundred two patients who were starting antidepressant therapy in a managed care primary care setting were assigned to either treatment as usual, telehealth care (in which nurses followed up with depressed patients in a series of 10 telephone calls over 4 months), or telehealth care plus peer support (trained health plan members who had recovered from depression). At 6 weeks of treatment, a significantly higher proportion of telehealth patients than usual care patients had a more than 50% decrease in their Hamilton Rating Scale for Depression scores (50% vs. 37%, $p = .01$). At 6 months, this significant difference persisted (57% vs. 38%, $p = .003$). Additionally, satisfaction with health care was higher in the combined telehealth care groups than in the treatment-as-usual group. The addition of peer support made no difference. One surprising result was that medication adherence was no higher in the combined telehealth care groups than in the usual care group. However, no longer-term results have been reported, so the sustainability of this acute-phase intervention is not known.

Wells and coworkers[22] studied the effect of implementing quality-improvement initiatives on the treatment of depression in a series of primary care practices. These quality-improvement initiatives ranged from clinician and patient education to specific clinician training to facilitated referral to mental health providers, and practices were allowed to choose the options that best met their specific needs. The quality-improvement interventions appeared to be effective in the short term. At both 6 and 12 months, quality-improvement clinic patients were significantly more likely to have received either counseling or an adequate dose and duration of antidepressant medication than usual care clinic patients (51% vs. 40% at 6 months, $p < .001$; 59% vs. 50% at 12 months, $p = .006$), and similar results were seen in the prevalence of depression at 6 and 12 months, with fewer patients in the quality-improvement clinics meeting diagnostic criteria than patients in the usual care clinics (40% vs. 50% at 6 months, $p = .001$; 42% vs. 51% at 12 months, $p = .005$). Although the differences between the 2 treatment groups in these measures were still statistically significant at 12 months, they were small in absolute terms and the gap was narrowing, again raising questions about the long-term impact of the intervention.

Taken together, these results suggest that enhancing the practice environment may be the most promising strategy to date to improve primary care treatment of depression. However, the studies focus on the acute phase of treatment with relatively short-term follow-up and do not address the key primary care issue of sustaining treatment for depression over time in the face of multiple competing demands.

Long-Term Strategies

Because depression is a chronic condition with a high risk for recurrent episodes even after successful treatment, the long-term treatment goals associated with chronic disease management—maintaining function, minimizing disability, and integrating treatment into everyday life—are at least as important as short-term outcomes. To achieve these long-term goals, a strong treatment alliance or collaborative bond between physician and patient is necessary as they work together over time to manage the chronic problem of depression in the context of multiple shifting priorities. Under these circumstances, the importance of determining the patient's own goals for treatment cannot be overstated. One patient may aim for improved functional status, whereas another may be more concerned about relief of certain symptoms that may or may not be the important symptoms used to diagnose the disorder. Research in the area of determining a patient's goals for treatment is just beginning, and one of our basic needs is to learn how to incorporate patient preferences, priorities, and goals into meaningful treatment outcome measures. Once we can do this, we can more accurately evaluate the utility of current and future clinical treatment guidelines or algorithms.

EVALUATING ALGORITHMS AND TREATMENT GUIDELINES

Several clinical guidelines and algorithms exist for the treatment of depression in primary care.[23,24] However, some of these guidelines were intended to serve as assessment tools rather than clinical treatment guides. Others are disseminated by managed health care plans and linked to restricted formularies offered by the plans' pharmacy benefit managers. Primary care physicians are increasingly required to follow one medication guideline for patients enrolled in a certain health care plan and another conflicting guideline for patients in a different plan, which decreases the acceptance and use of guidelines. Primary care physicians need guidelines that are generalizable, accessible, and usable at the point of care. A printed guideline on a bookshelf in the doctor's office may not be used, a 1-page health plan–created algorithm listing preferred medications may be lost in the flow of paper through the practice, but a computerized algorithm available in the examination room or on a personal computer—one that can provide the preferred medications from each health plan formulary—is likely to be far more useful to clinicians.

When evaluating algorithms or guidelines, clinicians also need to judge them on the basis of the evidence presented. A guideline that presents only expert opinion without any evidence backing it will be difficult for primary care physicians to trust. Balancing this need for evidence with the incorporation of new and innovative treatments can be challenging for any clinician treating depression.

WHEN TO REFER OR CONSULT

The best treatment guidelines do not address the questions "Who should provide care?" "Who should be referred?" and "When should a patient be referred?" Rather, they focus on evidence-based answers to questions of "what?" and "when?":

What are the criteria for treatment?
What medications work?
What other treatments are effective?
When should treatment be offered?
When should clinical follow-up take place?
When should a treatment plan be changed?

These questions are particularly appropriate for treatment guidelines for depression, as primary care physicians vary widely in their interest in and capacity to treat depression, and the mental health professional referral network varies widely in different practice settings.

Primary care physicians must have expertise in a wide range of health conditions and may not have the time or interest to add depression to their list, and even for interested and expert physicians, the organization of the practice may preclude the option of spending additional time with a depressed patient. The decision to consult with or refer to a mental health professional depends on many factors: the individual physician's judgment of the severity of the problem and his or her own ability to manage it, the patient's preferences, and the availability and cost of mental health services. A guideline cannot adequately specify all of these parameters, so the referral decision should always be made at the individual level, taking into account the treatment goals of both clinician and patient.

CONCLUSION

Primary care clinicians face 2 main tasks when addressing depression in routine practice: to accurately identify those patients who are most likely to benefit from antidepressant treatment and to provide the best treatment options possible in the limited time available per visit. The heterogeneity of the depression seen in primary care settings, the high level of comorbidity seen in depressed primary care patients, and the presence of several barriers to detection and treatment make it difficult for primary care physicians to carry out these 2 tasks. Clinical guidelines and treatment algorithms can provide valuable guidance to clinicians in management of the acute phase of treatment, but they provide little help with the long-term management issues that are of equal importance to primary care physicians. Future efforts should focus on creating guidelines that are more generalizable, accessible, and usable at the point of care.

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