

# Primary Care Physicians' Medical Decision Making for Late-Life Depression

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**OBJECTIVE:** To describe primary care physicians' clinical decision making regarding late-life depression.

**DESIGN:** Longitudinal collection of data regarding physicians' clinical assessments and the volume and content of patients' ambulatory visits as part of a randomized clinical trial of a physician-targeted intervention to improve the treatment of late-life depression.

**SETTING:** Academic primary care group practice.

**PATIENTS/PARTICIPANTS:** One-hundred and eleven primary care physicians who completed a structured questionnaire to describe their clinical assessments immediately following their evaluations of 222 elderly patients who had reported symptoms of depression on screening questionnaires.

**INTERVENTIONS:** Intervention physicians were provided with their patient's score on the Hamilton Depression rating scale (HAM-D) and patient-specific treatment recommendations prior to completing the questionnaire regarding their clinical assessment.

**MAIN RESULTS:** Those physicians not provided HAM-D scores were just as likely to rate their patients as depressed, as determined by specific query of these physicians regarding their clinical assessments. A physician's clinical rating of likely depression did not consistently result in the formulation of treatment intentions or actions. Treatment intentions and actions were facilitated by provision of treatment algorithms, but treatment was received by fewer than half of the patients whom physicians intended to treat. Barriers to treatment appear to include both physician and patient doubts about treatment benefits.

**CONCLUSIONS:** Lack of recognition of depressive symptoms did not appear to be the primary barrier to treatment. Recognition of symptoms and access to treatment algorithms did not consistently result in progression to subsequent stages in treatment decision making. More research is needed to determine how patients and physicians weigh the potential risks and benefits of treatment and how accurately they make these judgments.

**KEY WORDS:** depression; aged; primary care; practice patterns.

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Much of the previous literature concerned with improving the treatment of primary care patients with depression has focused on interventions to improve the rate of recognition of depressive symptoms.<sup>1-20</sup> The success of these interventions hinges on the assumption that treatment intentions and actions will follow reliably from physician recognition of depressive symptoms. However, there is increasing evidence that physicians recognize depressive symptoms more often than they document these

symptoms in the medical record,<sup>7-11</sup> that a specific depression diagnosis does not necessarily follow from recognition of symptoms, and that treatment of depression does not necessarily follow from a diagnosis.<sup>9, 12</sup> There are likely barriers at multiple stages of decision making for late-life depression, and these barriers may arise from combinations of patient, physician, or practice environment variables.<sup>2, 7, 12, 21-33</sup> Indeed, for treatment of depression to be initiated, both the physician and patient must agree that the symptoms warrant treatment, and that treatment is effective, practical, and available.

We recently reported the results of a randomized clinical trial of physician-targeted interventions to improve the care of late-life depression by addressing barriers to its recognition and treatment by primary care physicians.<sup>22</sup> We provided the intervention physicians with their patient's Hamilton Depression rating scale (HAM-D) score, an interpretation of this score, patient education materials, and patient-specific treatment recommendations during three additional clinic visits scheduled specifically to address the patient's depressive symptoms. Patients of control physicians received usual care. There was a significant increase in depression diagnosis and treatment among the intervention group but less than half of the patients of intervention physicians actually received specific treatment for depression, and there was no significant difference between the treatment and control groups in patient outcomes. The goals of the present study were to better understand how these physicians made treatment decisions for individual patients, to describe the apparent barriers to treatment, and to describe

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the impact of the intervention in overcoming these barriers.

Figure 1 depicts the conceptual framework we used to describe physician decision making for late-life depression. In the first stage, the physician assesses the depressive symptoms in the context of the patient's overall condition. In the second stage, the physician formulates treatment intentions given his or her judgment of the potential effectiveness, risks, and costs of available treatments. In the third stage, the physician and patient decide whether to initiate a specific treatment. The transitions between any stages may be hampered by several barriers, some of which may be captured by physician, patient, or practice characteristics. Physicians may or may not document these decisions in the medical record. We hypothesized that physicians who were provided with a patient's score on the HAM-D would be more likely to rate their patient as depressed, and that physicians provided specific treatment recommendations would be more likely to initiate treatment for depression.

## METHODS

The study site is the General Medicine Practice at the Regenstrief Health Center, a multispecialty ambulatory care clinic associated with an urban county hospital. The General Medicine Practice comprises 32 different clinic sessions, each staffed by three to five physicians caring for their own panel of patients. The clinic sessions were randomly assigned to be intervention or control sessions; physicians and their patients were assigned to intervention and control groups according to their clinic session.<sup>34</sup> No physician had both intervention and control patients. As previously described, we screened 3,767 patients aged 60 years and older for depression, dementia, and alcoholism during routine office visits between January 1991 and July 1993.<sup>22</sup> The screening instruments included the Center for Epidemiologic Studies Depression scale (CES-D),<sup>35</sup> the Short Portable Mental Status Questionnaire (SPMSQ),<sup>36</sup> and the CAGE alcoholism questionnaire.<sup>37</sup> Of the 515 eligible patients who scored at least 16 on the CES-D, 254 (49%) enrolled in the study and completed a second-stage extended interview consisting of the HAM-D<sup>38</sup> and the Sickness Impact Profile (SIP).<sup>39</sup> In addition, we determined age, race, gender, and education for

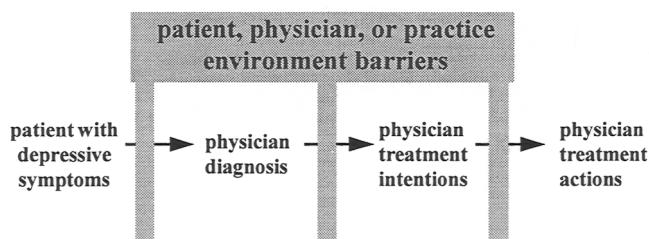
each patient. Of the 254 patients enrolled, medical records for the subsequent year were available for 222 patients, who are the subjects of this report; 175 patients had initial HAM-D scores of at least 15 and were the subjects of our earlier report.<sup>22</sup>

These 222 patients were cared for by 111 different physicians. There were 94 patients of 52 control physicians and 128 patients of 59 intervention physicians. These physicians completed a 22-item questionnaire designed to assess their attitudes concerning late-life depression prior to the start of the study.<sup>26</sup> In addition to assessing attitudes, we recorded gender and faculty or housestaff status for each physician. The two practice setting characteristics included in this study were the number of patients seen by each physician per session and the physician's study assignment. The number of patients seen per physician per each 3-hour clinic session averaged over 1 year serves as a proxy for the amount of time available for the care of a typical patient in a given physician's practice over that year.

Following the patient's initial visit, both intervention and control physicians completed a questionnaire to measure specifically their clinical assessment of the patient's depressive symptoms. The control physicians' questionnaire consisted of five multiple-choice questions: (1) What is the percent likelihood that this patient has clinical depression (scale of 0% to 100%)? (2) How severe is this patient's depression (scale of 1 to 10 with 10 the most severe)? (3) What is the percent likelihood that this patient has dementia? (4) How severe is this patient's dementia? and (5) What is the percent likelihood that this patient has alcohol dependency? The last three items were included to mask the intent of the questionnaire.

The intervention physician's questionnaire consisted of the same five questions and three other questions: (1) If you believe that this patient is depressed, what is the percent likelihood that this patient's depressive symptoms will respond to therapy? (2) Which intervention(s) do you think is (are) indicated at this time: Physician counseling? Antidepressant medications? Discontinue potentially harmful medication? Psychiatry referral? Other? (3) How difficult was it to convince this patient to accept your suggested intervention(s)? Control physicians were not asked the additional three questions to minimize effects on their treatment decisions for these patients. Intervention physicians were aware of their patient's HAM-D score at the time they completed the questionnaire; control physicians did not have access to this information.

Using the Regenstrief electronic medical record system,<sup>40</sup> we determined the date and location of all enrolled patients' encounters in any outpatient clinic as well as visits to the emergency room and hospital admissions for 1 year from the screening interview. We obtained a copy of the written note corresponding to all outpatient encounters. All written notes were subjected to structured data abstraction completed by a registered nurse who was blinded to the study hypotheses and the patient and phy-



**FIGURE 1.** Conceptual framework describing physician decision making for late-life depression.

sician study assignment. For each note she determined whether the visit was scheduled or unscheduled, where the encounter took place, and whether the focus of the note was on medical, psychiatric, or social conditions. For each note she also determined if there was any notation of: (1) depression or depressive symptoms; (2) loss of interest or pleasure, weight loss, insomnia, hypersomnia, psychomotor retardation or agitation, fatigue, feelings of worthlessness, or difficulty concentrating; (3) suicidal ideation; (4) psychosocial stressors; (5) patient refusal of antidepressants; (6) patient refusal of psychiatry referral; (7) contraindications to antidepressant drugs; (8) cognitive impairment, anxiety, alcohol abuse, other substance abuse, and other psychiatric illness; (9) adverse effects of medications; and (10) a deteriorating or terminal medical condition. We then tabulated all outpatient encounters over the course of 1 year to determine if any of these 10 items were mentioned at any time in any of the patient's outpatient visits with any physician.

Using the same methods described above, the research nurse determined if there was any documentation of treatment intentions for depression in the 6 months following the patient's enrollment. Treatment intentions

included notation in the medical record of planned antidepressant drug treatment, discontinuing harmful medications, psychiatry referral, physician counseling, or other interventions offered as treatment for depression. Harmful medications were those identified in the literature as potential causes of depression.<sup>22</sup> We determined for all patients whether they received an antidepressant within 6 months of enrollment, had a potentially harmful medication discontinued, or were referred to psychiatry within 6 months of enrollment.

We used  $\chi^2$  and  $t$  tests when appropriate to examine between-group differences in the patient, physician, and practice environment characteristics, in the volume and content of patient encounters, and in physicians' assessments, intentions, and actions. The data were analyzed in a series of three separate stepwise logistic regression models that correspond to the three stages of physician decision making depicted in the conceptual model. Because we were modeling physician-level outcomes and there were variable numbers of patients per physician, the logistic models include only the first patient encounter per physician to ensure independent observations. We chose the physician's first patient, rather than a random

**Table 1. Patient, Physician, and Practice Characteristics\***

Patient characteristics (n = 222)	
Mean age in years	65.9 ± 6.2 (range 60–88)
Age ≥ 70	21.8%
Female	76.3%
Black	53.9%
Education	
< 8 years	44.4%
8–12 years	46.1%
> 12 years	9.5%
Evidence of alcoholism <sup>†</sup>	14.5%
Evidence of cognitive impairment <sup>‡</sup>	12.5%
Mean CES-D score <sup>§</sup>	25.3 ± 8.1 (range 16–52)
Mean HAM-D score <sup>§</sup>	18.2 ± 7.1 (range 2–35)
HAM-D score ≥ 18 <sup>§</sup>	58.6%
Mean SIP total score <sup>§</sup>	28.8 ± 13.2 (range 2–68)
Mean SIP physical subscale score <sup>§</sup>	22.7 ± 13.8 (range 0–64)
Mean SIP psychosocial subscale score <sup>§</sup>	32.4 ± 18.1 (range 0–81)
Physician characteristics (n = 111)	
Female	30.8%
Faculty	28.8%
Mean attitude scale score <sup>  </sup>	53.2 ± 4.1 (range 41–62)
Practice characteristics	
Intervention study group <sup>¶</sup>	57.9%
Mean number of patients per session	6.8 ± 1.7 (range 3–12.7)

\*There were no significant differences between study groups for any listed independent variable.

<sup>†</sup>CAGE alcoholism questionnaire score of ≥ 2.

<sup>‡</sup>Short Portable Mental Status questionnaire score ≥ 3 errors.

<sup>§</sup>CES-D: Centers for Epidemiologic Studies Depression scale. Only patients with CES-D score ≥ 16 were invited to enroll in study; HAM-D, Hamilton Depression scale; SIP, Sickness Impact Profile.

<sup>||</sup>Physician's score on a 22-item late life depression attitude questionnaire. See Callahan et al. 1992.<sup>26</sup>

<sup>¶</sup>Physicians in this group were provided HAM-D scores and treatment recommendations.

Table 2. Volume and Content of Ambulatory Encounters Over One Year

	Control (n = 94)	Intervention* (n = 128)	p Value
Volume and focus of ambulatory encounters			
Mean number of scheduled clinic visits	8.2 ± 6.2	9.7 ± 5.8	.006
Any unscheduled clinic visit	51.1%	45.3%	.40
Any emergency room visit	48.9%	46.9%	.77
At least one visit focusing on:			
Medical conditions	95.7%	95.3%	.88
Psychiatric conditions	21.3%	58.6%	.001
Social conditions	6.4%	9.4%	.42
Patients with specific chart documentation of:			
Depression or depressive symptoms	40.4%	86.7%	.001
Symptoms of major depression†	39.4%	50.8%	.09
Suicidal ideation	2.1%	7.8%	.06
Psychosocial stressors	39.4%	53.1%	.04
Patient refusal of antidepressant drugs	7.4%	12.5%	.22
Medical contraindication to antidepressant drugs	0%	3.1%	.13
Patient refusal of psychiatry referral	4.3%	4.7%	.88
Cognitive impairment	7.4%	6.2%	.73
Anxiety	26.6%	21.1%	.34
Alcohol abuse	13.8%	10.9%	.51
Any substance abuse	25.5%	16.4%	.09
Other psychiatric illness	4.3%	1.6%	.22
Adverse effects of medications	24.4%	31.2%	.27
General medical condition deteriorating	11.7%	8.6%	.44
General medical condition terminal	3.2%	1.0%	.18

\*Physicians in this group provided HAM-D scores and treatment recommendations.

†Loss of interest or pleasure, weight loss, insomnia, hypersomnia, psychomotor retardation or agitation, fatigue, feelings of worthlessness, or difficulty concentrating.

patient, because decisions regarding subsequent patients may have been influenced by previous experience with the study interventions. For each logistic regression model, we determined the model  $\chi^2$ , the area under the receiver operating characteristic curve, and the Hosmer-Lemeshow goodness-of-fit statistic.

For physicians' assessments (stage 1), we modeled the physician's assessment of the percent likelihood of clinical depression. Clinical assessments were dichotomized for this regression at ratings of 50% or higher likelihood of depression (the median rating). The independent variables were the patient, physician, and practice environment characteristics listed in Table 1. Independent variables were retained in the final models if the associated *p* value was  $\leq .05$ . The results of a linear regression model were similar but are not presented.

For physicians' treatment intentions, we modeled physicians' medical record documentation of any intention to treat. All independent variables that were included in the first model as well as the physician rating of the likelihood of clinical depression as a continuous variable were included in the second- and third-stage model. For physicians' actions, we modeled the dichotomous outcome of whether any treatment action occurred at any time in the 6 months following the patient's enrollment. Primary care physician counseling was not included as an

action in this model because we had no mechanism to determine whether it actually occurred.

## RESULTS

Table 1 displays distribution of the patient, physician, and practice characteristics. There were no significant differences by study group for any of these variables. Over one fourth of these patients had evidence of either comorbid cognitive impairment or alcoholism. More than half had HAM-D scores of 18 or higher, indicating moderate to severe symptoms of depression, and most patients had profound functional impairment as measured by the SIP.

Table 2 displays the volume and content of all outpatient encounters in the year following enrollment. Even though intervention patients were provided with three additional visits during the study period, there was a mean difference of only 1.5 scheduled visits over the course of 1 year between the two groups. Intervention patients were more likely to have at least one encounter that focused on psychiatric conditions. Nearly all patients had at least one visit focusing on a medical condition. Also, physicians documented that 13% of patients either refused treatment or had a contraindication to antidepressant medication.

Table 3 displays the frequency of physicians' clinical assessments, treatment intentions, and actions. Control

Table 3. Physicians' Clinical Assessments, Treatment Intentions, and Treatment Actions

	Control (n = 94)	Intervention* (n = 127)	p Value
Recognition (clinical assessments at enrollment) <sup>†</sup>			
Likelihood of depression rated $\geq$ 50%	54.8	49.6	.44
Likelihood of depression rated $\geq$ 50% among patients with documented HAM-D score $\geq$ 18 <sup>‡</sup>	64.0%	57.7%	.43
Mean severity of depression (on scale 1–10)	2.8	2.6	.50
Likelihood of treatment response rated $\geq$ 50%	NA <sup>§</sup>	44.1	
Treatment intentions			
<i>As noted in medical record within 6 months after enrollment</i>			
Intention to treat	18.2%	63.8%	.001
By antidepressant medication	11.8%	47.2%	.001
By psychiatry referral	9.7%	14.2%	.31
By physician counseling	0%	5.5%	.02
By stopping potentially harmful medication	0%	5.5%	.02
Other noted depression treatment intentions	2.1%	10.2%	.02
Intention to treat among patients whom physicians assessed as $\geq$ 50% likelihood of depression <sup>  </sup>	23.5%	77.8%	.001
<i>As explicitly stated in physician questionnaire</i>			
Intention to treat	NA <sup>§</sup>	71.7%	
By antidepressant medication	NA	33.1%	
By psychiatry referral	NA	4.7%	
By physician counseling	NA	35.4%	
By stopping potentially harmful medication		26.8%	
Other noted depression treatment intentions		6.3%	
Intention to treat among patients whom physicians assessed as $\geq$ 50% likelihood of depression <sup>  </sup>	NA	92.1%	
Intention to treat by questionnaire but not by chart documentation within 6 months	NA	27.5%	
Treatment actions (within 6 months of enrollment)			
Initiation of a treatment plan	29.0%	46.5%	.001
Initiated on antidepressant	9.7%	22.0%	.01
Referred to psychiatry	14.0%	13.3%	.90
Potentially harmful drug discontinued	19.3%	25.2%	.30
Initiation of treatment plan among patients whom physicians assessed as $\geq$ 50% likelihood of depression <sup>§</sup>	33.3%	58.7%	.04

\*Physicians in this group were provided HAM-D scores and treatment recommendations. Post-visit questionnaire data missing for one patient.

<sup>†</sup>As determined on physician questionnaire.

<sup>‡</sup>For control patients n = 51; for intervention patients n = 78.

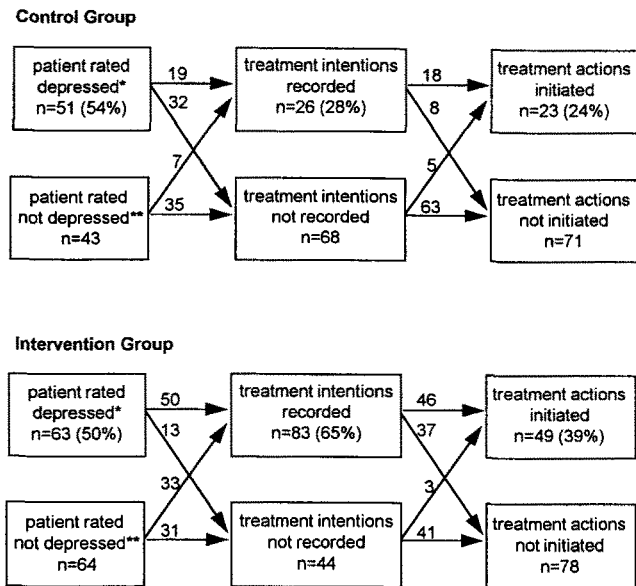
<sup>§</sup>Not included on control physician questionnaire.

<sup>||</sup>For control patients n = 51; for intervention patients n = 63.

physicians were just as likely as intervention physicians to rate their patients as depressed, but treatment intentions were recorded for more intervention patients, both those who were rated as depressed and those who were not (Fig. 2). Intervention physicians assessed only 44% of patients as likely to respond to therapy, and most physicians rated the patient's depression severity as less than 3 on a 10-point scale (Table 3). Although treatment actions were initiated for more intervention patients than control patients, recorded treatment intentions were rated for a smaller proportion of intervention patients than control patients (Fig. 2).

Table 4 displays the results of the logistic regression models. Physicians' clinical assessments of a 50% or

greater likelihood of depression were independently associated with the patient's scores on the HAM-D, the SIP psychosocial score, and faculty status, but not with the intervention. Thus, patients with greater psychosocial impairment were less likely to be diagnosed, and patients of faculty physicians were more likely to be diagnosed. In the logistic regression model of treatment intentions, a physician's clinical rating of depression was highly correlated with documentation of treatment intention for both groups. Even when controlling for the physician's clinical assessment, intervention physicians were more likely to document treatment intentions. Controlling for physician's clinical assessments and the intervention, patients aged 70 years and older were less likely to have documen-



**FIGURE 2.** Comparison of physician decision making for late-life depression among experimental groups. \*Physician rating of  $\geq 50\%$  likelihood of clinical depression; \*\*physician rating of  $< 50\%$  likelihood of clinical depression.

tation of treatment intentions. In the logistic regression model of treatment actions, intervention physicians were more likely to initiate treatment actions even when controlling for the physicians' clinical assessments. Also, controlling for physicians' clinical assessments and study group, faculty physicians were less likely to initiate treatment. Each of these models had acceptable reliability and discrimination as shown in Table 4.

## DISCUSSION

There are two themes from these analyses that deserve further discussion. First, physicians recognized depressive symptoms in the majority of patients, but there is a significant and important gap between physicians' recognition and their subsequent formulation of treatment intentions and actions. Second, these primary care physicians appear to use clinical cues not inherent to depression severity scales to determine the likelihood of depression, its severity, and the likelihood of response to therapy, and there is some evidence of both patient and physician doubt regarding the potential benefits of treatment of late-life depression.

We had hypothesized that physicians who were provided a patient's score on the HAM-D would be more likely to rate their patient as depressed. Physicians' assessments of the likelihood of depression were associated with HAM-D scores but not with the intervention, indicating that the provision of HAM-D scores did not influence the clinical assessment. Even when intervention physicians were aware that their patients had HAM-D scores of 18 or higher, less than 60% of these patients were rated

as depressed. These findings are similar to previous studies that have shown relatively high rates of physician recognition of depressive symptoms (53–73%) when recognition is determined by directly asking the physician rather than by relying on chart documentation.<sup>7–11</sup>

Higher physician rating of the likelihood of depression was associated with a greater likelihood of progression to treatment intention and actions. The patients' HAM-D scores were not significantly correlated with physicians' intentions and action decisions after controlling for the physicians' own clinical assessments. However, even a physician clinical assessment of a greater than 50% likelihood of clinical depression did not always result in intention to treat.

Older patients were less likely to be recommended for treatment even when controlling for the physician's clinical assessment and study group. The perception of the older patient as less amenable to treatment for depression has been previously reported both in primary care<sup>9, 12, 25</sup> and in the specialty psychiatry setting.<sup>28</sup> One proposed barrier to the transition between intentions and actions is a lack of knowledge regarding treatment options. We found some evidence of this in the comparison between our control and intervention physicians' decision making. When controlling for physicians' actual clinical assessments, the physicians in the intervention group were more likely to document intentions to treat and initiate treatment.

The largest barrier to treatment of late-life depression was seen between intention to treat and actual treatment. Although intervention physicians reported intentions to treat 92% of the patients they themselves rated as depressed, and although these physicians were provided patient-specific treatment recommendations, only 58.7% of these patients actually received treatment within 6 months. Among patients of control physicians who were rated as depressed by their physicians, only 33.3% received treatment within 6 months.

One reason for the difference between intentions and actions may be patient acceptance of treatment recommendations. Intervention physicians reported difficulty convincing 11.8% of the patients they intended to treat. Thus, patient refusal or deferral of therapy would account for a significant portion of the difference between physicians' intentions and actions. Physicians were fairly pessimistic about patients' potential for response to therapy, rating less than half of their patients as having more than a 50% likelihood of treatment response and generally rating the depression severity as low. An important area for future study is whether these clinical assessments are accurate. Faculty physicians were more likely to diagnose depression but less likely to treat it. One explanation for this finding may be that the tendency not to treat is based on previous negative experience. Previous studies have reported that physician gender, years in practice, and specialty affect attitudes toward depression and psychosocial issues.<sup>33, 41–44</sup> Previous studies have also shown that phy-

Table 4. Logistic Regression Models for Physician Decision Making.\*

Variable	Odds Ratio	95% CI
Recognition (clinical assessment; likelihood of depression $\geq$ 50%)		
HAM-D score <sup>†</sup>	1.11	1.03, 1.56
SIP psychosocial score <sup>†</sup>	0.96	0.94, 0.99
Faculty physician	3.09	1.15, 8.26
Model $\chi^2$ 18.1 with 3 d.f.; area under receiver operating characteristic curve 0.72; Hosmer-Lemeshow goodness-of-fit test 10.3 with 8 d.f. ( $p > .2$ ). Candidate variables not retained in final model: patient age, gender, race, SIP physical subscale score; physician gender and attitude scale score, physician rating of alcoholism and dementia, mean number of patients seen by physician per visit, and study group.		
Treatment intentions (as noted in medical record within 6 months after enrollment)		
Physician clinical assessment <sup>†</sup>	1.03	1.01, 1.05
Physician study group	12.64	4.24, 37.5
Patient age $\geq$ 70	0.18	0.05, 0.67
Model $\chi^2$ 44.7 with 3 d.f.; area under receiver operating characteristic curve 0.85; Hosmer-Lemeshow goodness-of-fit test 12.9 with 8 d.f. ( $p = .11$ ). Candidate variables not retained in final model: patient gender, race, HAM-D, SIP physical and psychosocial scores; physician rank, gender and attitude scale score, physician rating of alcoholism and dementia and severity of depression, and mean number of patients seen by physician per visit.		
Treatment actions (within 6 months of enrollment)		
Physician clinical assessment <sup>†</sup>	1.02	1.01, 1.04
Physician study group	3.52	1.50, 8.24
Faculty physician	0.35	0.12, 0.99
Model $\chi^2$ 18.5 with 3 d.f.; area under receiver operating characteristic curve 0.73; Hosmer-Lemeshow goodness-of-fit test 5.7 with 8 d.f. ( $p > .20$ ). Candidate variables not retained in final model: patient gender, race, HAM-D, SIP physical and psychosocial scores; physician gender and attitude scale score, physician rating of alcoholism and dementia and severity of depression, and mean number of patients seen by physician per visit. Treatment intention was not a candidate variable.		

\*All three regression analyses limited to 111 cases representing the first patient encounter per physician. See Methods section for detailed explanation.

<sup>†</sup>HAM-D indicates Hamilton Depression scale score; SIP, Sickness Impact Profile.

<sup>‡</sup>Likelihood of depression rated from 0% to 100% by physician on questionnaire.

sicians' beliefs regarding the effectiveness of treatments can have important influences on their practice patterns.<sup>25, 27, 41, 45, 46</sup>

This study has several limitations. First, we used a two-staged assessment with the CES-D and HAM-D, rather than structured psychiatric interviews, to identify patients with significant symptoms of depression. Thus, for any given patient, treatment of depression may not have been indicated. Second, although we were able to directly query physicians concerning their assessment of the patient's depression, we have only indirect evidence of the influence of patient, physician, and practice environment characteristics on these assessments. Thus, cause-and-effect statements regarding variables in the logistic regressions are not appropriate. Third, there are many potential barriers to treatment not measured by this study; it would be helpful in future studies to ask physicians more directly about how they decided to treat or not to treat a given patient. Of course, the more intense and overt the scrutiny of the physicians' practice patterns, the more likely one is to affect their natural decision-making process.

In summary, recognition of depressive symptoms did not appear to be the primary barrier to treatment of late-life depression in this practice. Recognition of these symptoms, even when the physician assessed a high likelihood of clinical depression, did not always trigger the

subsequent stages in the decision-making process. Provision of specific treatment recommendations overcame barriers to treatment for some physicians and patients, but further research is needed to determine how best to facilitate the transition from recognition of late-life depression to effective treatment.

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