Does Physician Education on Depression Management Improve Treatment in Primary Care?

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OBJECTIVE: **To assess the effect of physician training on management of depression.**

DESIGN: **Primary care physicians were randomly assigned to a depression management intervention that included an educational program. A before-and-after design evaluated physician practices for patients not enrolled in the intervention trial.**

SETTING: **One hundred nine primary care physicians in 2 health maintenance organizations located in the Midwest and Northwest regions of the United States.**

PATIENTS/PARTICIPANTS: **Computerized pharmacy and visit data from a group of 124,893 patients who received visits or prescriptions from intervention and usual care physicians.**

INTERVENTIONS: **Primary care physicians received education on diagnosis and optimal management of depression over a 3-month training period. Methods of education included small group interactive discussions, expert demonstrations, role-play, and academic detailing of pharmacotherapy, criteria for urgent psychiatric referrals, and case reviews with psychiatric consultants.**

MEASUREMENTS AND MAIN RESULTS: **Pharmacy and visit data provided indicators of physician management of depression: rate of newly diagnosed depression, new prescription of antidepressant medication, and duration of pharmacotherapy. One year after the training period, intervention and usual care physicians did not differ significantly in the rate of new depression diagnosis ($P = .95$) or new prescription of antidepressant medicines ($P = .10$). Meanwhile, patients of intervention physicians did not differ from patients of usual care physicians in adequacy of pharmacotherapy ($P = .53$) as measured by 12 weeks of continuous antidepressant treatment.**

CONCLUSIONS: **After education on optimal management of depression, intervention physicians did not differ from their usual care colleagues in depression diagnosis or pharmacotherapy.**

KEY WORDS: **physician education; primary care; depression.**
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"At no time in the history of medicine has the growth in knowledge and technologies been so profound."[1] However, this proliferation of new knowledge would not result in better individual or public health outcomes if primary care physicians (PCPs) do not integrate key advances into daily practice. Depression is a major public health concern because of its high prevalence, associated disability, and increased cost for the affected persons and society at large.[2] There is abundant scientific data demonstrating the efficacy of pharmacotherapy and psychotherapy in treating persons with major depression.[3] However, routine medical services do not reflect optimal management of depression.[4,5] Because PCPs care for the majority of depressed persons who seek medical service,[6] enhancing these providers for better management depression could significantly better individual and public health.

Physician education is popularly accepted as the method for translating research findings into daily patient care. There is an abundance of continuing medical education courses aimed at educating graduate physicians on current medical advances and clinical guidelines. These courses are offered with the expectation that increasing physician knowledge would improve patient care and enhance clinical outcomes. However, systematic reviews of randomized controlled trials revealed that most traditional continuing education programs (didactics) are not effective in changing physician practices.[7] Recently, 60 English PCPs were randomized to attend seminars, small group discussions, videotape demonstrations, and role-played guideline management of depression. This educational program was well received by the physicians but failed to change their recognition of depression or patient outcome.[8]

Results from research evaluating a variety of physician education methods have been more encouraging. For example, individualized face-to-face suggestions by academic detailing for a preferred drug or computerized reminders at time of the encounter have been effective in changing a specific physician practice.[9,10] Some randomized and sequential (before-after) comparisons of comprehensive physician training to better address patients' emotional distress such as using video demonstrations, interactive feedback, or role playing have shown beneficial changes in physician practices and even patient outcomes.[11–15] A recent review of experimental and quasi-experimental studies on interventions to improve diagnosis and treatment of mental disorders in primary care showed that 78% demonstrated improved diagnosis, 70% resulted in improved treatment, and 50% or less found enhanced clinical outcomes.[16] These prior reports suggested that in general, it is easier to change a specific behavior, such as diagnosis or prescription of a specific medication,

but the more comprehensive the approach, such as diagnosis, treatment, and monitoring of depression treatment response, the more difficult it is to attain clinical improvement.[7–16]

In an earlier publication, we reported results from a large clinical trial of a systematic depression management program for frequent users of medical services with major depression.[17] That intervention included a physician education program on the diagnosis and management of depression with an emphasis on initiating and sustaining appropriate pharmacologic therapy. Results from that randomized depression trial for frequent users of medical services showed that intervention patients received more adequate pharmacotherapy and had better clinical and functional outcomes than patients continuing in usual care.

The design of our earlier study, specifically, randomization of education at the physician level, allowed us to examine whether the training program improved the depression care these physicians provided for their nonstudy patients. This report examines the effect of physician education on more than 90% of their patients. Patients in this report were not frequent users of medical services and thus not eligible for the earlier randomized controlled trial.

METHODS

The earlier publication that described the main results of the randomized depression trial for frequent users of services also reported in detail the design, sampling method, and interventions at the level of patients and the organizational system.[17]

Study Setting

Our study was conducted in 15 primary clinics (5 at Group Health Cooperative [GHC], Seattle, Washington and 10 at Dean Health Plan [Dean], Madison, Wisconsin), 2 large HMOs. Participating physicians were in group-model clinics at Dean and staff-model clinics at GHC. Dean is a for-profit HMO serving 175,000 rural and suburban members, and GHC is a not-for-profit HMO serving 450,000 urban and suburban members.

Sample Selection

All PCPs from the selected clinics were invited to participate. One hundred nine physicians (78.4% of those invited, N = 139) were included in these analyses. Physicians who refused participation or who were retiring shortly were excluded (25 at Dean and 5 at GHC). For patient level analyses, we excluded depressed patients who were frequent users of services and eligible for the previously described randomized intervention trial. Computerized databases from participating physician practices in the 2 HMOs were used to identify health plan members between the ages of 18 years and 64 whose ambulatory visits were below the top 15th percentile for the prior 2 consecutive years. Patients were assigned intervention and usual care status accordingly to the randomization group of their PCPs. For each patient, we examined only the first visit to a study physician during the study period (i.e., each patient contributed only 1 visit to the sample).

Randomization and Design

As described in our earlier publication of the randomized trial of depression management program for frequent users of medical services, PCPs were randomized in blocks within their clinic according to their full-time or part-time status. For the pre and post comparisons we report here, the training period began when the intervention PCPs attended a small group educational session and lasted for the 3 months following the initial training session. The "pre" period consisted of the 12 months before training and the "post" period began after the 3-month training period and also lasted 12 months.

Physician Education on Depression Management

The educational format of the depression management program was designed to meet the needs of busy primary care providers. It used many of the efficacious methods described earlier such as small group interactive discussion, role-play, academic detailing, feedback, and review of patient progress with a psychiatric consultant. We began by conducting a small group session at each participating clinic. Study psychiatrists (GS and DK) and a PCP (EHBL) provided a standardized 2-hour training program for intervention physicians. Contents included: 1) detailed demonstration of structured diagnostic assessment of major depression using Diagnostic and Statistical Manual-IV criteria[18]; 2) criteria for urgent specialty referrals; 3) indications and cautions for pharmacotherapy; 4) algorithm for antidepressant pharmacotherapy; 5) patient education to increase adherence; 6) demonstration of brief strategies for patient activation; and 7) importance of regular follow-up to assess patient response and progress. During the last half hour of this training session, study physicians role-played the initial study visit. They practiced making a diagnosis of major depression, prescribed antidepressant medicines, and activated patients by helping them schedule pleasant activities. For physicians who could not attend the small group sessions, the study psychiatrist met them individually, and used academic detailing to convey the essential information for depression management.

Although we included a specific pharmacotherapy algorithm, PCPs could use their clinical judgment to adjust treatment according to individual patient needs. For patients who were successfully treated previously with an antidepressant medicine that was well tolerated, the algorithm recommended using the same medication again. All others were to be started with sertraline hydrochloride at a recommended starting dose of 50 mg per day. For a detailed description of our pharmacotherapy algorithm,

please refer to published report of the earlier randomized trial.[17]

After the initial educational session, intervention PCPs met with the study psychiatrists (1–3 times) to review progress of specific depressed patients who were enrolled in the frequent user study.[17] These brief meetings occurred as a routinely scheduled 15-minute visit with the PCP in the clinic or as a telephone visit. They also provided opportunities for the PCPs and psychiatrists to discuss other questions regarding depression treatment. Intervention PCPs telephoned the psychiatrist consultant as needed. The study protocol also recommended psychiatric consultation for patients failing to respond after 4 months of primary care treatment. Study psychiatrists actually provided consultation for 55 patients (27.1%) in the prior intervention study on frequent users of ambulatory services. Intervention group physicians received additional case-based feedback and education as a component of these consultations. Usual care physicians received neither additional training in depression management nor sham intervention from the study.

Study Measures

We used computerized visit and pharmacy data to assess how PCPs diagnosed and treated patients experiencing a new depressive episode. Diagnoses for depression (and respective International Classification of Diseases codes) included: major depression, single (296.20); major depression, recurrent (296.30); depressive disorder, NOS (311); dysthymic disorder (300.4); adjustment disorder with depressed mood (309.4); and adjustment disorder with mixed anxiety and depressed mood (309.0). A new diagnosis and a new antidepressant prescription are defined as absence of depression diagnosis or antidepressant prescription, respectively, in the preceding 180 days. Several practice indicators measured depression management: 1) new diagnoses per 100 primary care visits; 2) new antidepressant prescriptions per 100 visits; and 3) rate of new diagnosis accompanied by a new prescription per 100 visits.

Additionally, patient-based pharmacy data were also used as indicator of training effects. The National Committee for Quality Assurance (NCQA) has recommended using the Health Plan Employer Data and Information Set (HEDIS) criteria to evaluate quality of acute phase treatment for depression.[19] According to HEDIS measures, antidepressant pharmacotherapy is adequate during acute treatment phase, when a patient's prescription refill records show continuous treatment for at least 84 days within a 114-day period.

Statistical Analyses

Descriptive analyses provided rates of diagnosis and prescription for a new episode of depression and duration of antidepressant treatment. Logistic regression analyses[20] controlling for physician gender and medical specialty were used to model each practice indicator as a function of physician training group (intervention vs usual care), time periods (pre-study vs post-study), and site (Dean vs GHC). In this model, effect of training would appear as a group × time interaction. Three-way interaction (training group × time × site) was used to test for homogeneity of training effects across sites.

RESULTS

Of the 139 eligible physicians, 78.4% (109) participated. The intervention group had 56 physicians and the usual care group had 53 physicians. Because we excluded subjects enrolled in the earlier depression trial (top 15% frequent users of medical services with depression), study PCPs provided care for this sample of 124,893 patients. As some patients were frequent users in one year but did not continue their high use of medical services in the following year, our sample represented 91% of patients cared for by study physicians. Subjects were grouped according to the intervention or usual care status of their physicians with 60,689 in the intervention group and 64,204 in the usual care group. Table 1 shows the demographic characteristics of the patients and PCPs at GHC and Dean. About 90% of the GHC PCPs were family physicians while almost 70% of Dean PCPs were internists. There were more female and part-time physicians at GHC than Dean.

In the pre-study period, the intervention physicians had a slightly higher rate of new depression diagnoses (1.84 vs 1.63 visits per 100 visits). The first row of Table 2 shows that after training, the rate of diagnosing a new depressive episode increased slightly in both groups. In a logistic regression model including main effect of study group (intervention vs usual care), main effect of time (pre vs post), and the interaction of the two, the odds ratio (OR) associated with the interaction term was 1.01 (95% confidence interval [CI], 0.83 to 1.2). In other words, the pre-to-post change was essentially identical in the 2 groups with the 95% CI ranging from 17% lower to 20% higher in the intervention group.

As we examined new prescriptions of antidepressant medicines during the pre-study period, intervention physicians prescribed antidepressant treatment a little more

Table 1. Demographics of Primary Care Physicians and Patients

Characteristics of PCP	Intervention *N* = 56	Usual Care *N* = 53
Gender, % male, (*n*)	78.6 (44)	75.5 (40)
Family medicine, %, (*n*)	67.9 (38)	58.5 (31)
Full-time, %, (*n*)	92.9 (52)	81.1 (43)
Patient Characteristics	**Intervention *N* = 60,689**	**Usual Care *N* = 64,204**
Age, mean (SD)	46.4 (±17.7)	47.04 (±17.94)
Gender, % male, (*n*)	43.8 (26,560)	41.2 (26,424)

Table 2. Pre and Post Comparison of Depression Diagnosis, Prescription and Duration of Antidepressant Treatment

	Pre-study		Post-study		
Physician Diagnosis (Dx) and Prescription (Rx)	**Intervention (*N* = 44,031)**	**Usual Care (*N* = 46,693)**	**Intervention (*N* = 16,658)**	**Usual Care (*N* = 17,511)**	***P* Value**
New depression Dx/100 visits, % (*n*) [95% CI]	1.84 (810) [1.71 to 1.96]	1.63 (762) [1.51 to 1.74]	1.91 (319) [1.70 to 2.12]	1.68 (295) [1.49 to 1.87]	.95
New antidepressant Rx/100 visits, % (*n*) [95% CI]	1.82 (801) [1.69 to 1.94]	1.46 (684) [1.35 to 1.57]	1.63 (272) [1.44 to 1.82]	1.53 (268) [1.35 to 1.71]	.10
New depression Dx+Rx/100 visits, % (*n*) [95% CI]	0.64 (283) [0.57 to 0.71]	0.57 (266) [0.50 to 0.64]	0.72 (120) [0.59 to 0.85]	0.66 (115) [0.54 to 0.78]	.76
Antidepressant Treatment Duration	**Intervention *N* = 283**	**Usual Care *N* = 266**	**Intervention *N* = 120**	**Usual Care *N* = 115**	***P* Value**
12 wks continuous medication, % (*n*) [95% CI]	67 (190) [61 to 72]	63 (169) [57 to 69]	62 (75) [53 to 71]	63 (73) [54 to 72]	.53

frequently than did the usual care physicians (1.82 vs 1.46 prescriptions per 100 visits). The second row of Table 2 shows that after training, prescription rate decreased somewhat (not statistically significant) for intervention physicians and increased slightly in the usual care physicians. In a logistic regression model including group, time, and the interaction between the 2, the pre-to-post change did not differ significantly between the 2 groups (OR for interaction term, 0.83; 95% CI, 0.69 to 1.03).

The third row of Table 2 shows, in the pre-study period, about 64% of visits to the intervention physicians and 57% for the usual care group received a new prescription of antidepressant for a newly diagnosed episode of depression. Both groups showed a slight increase in the post-study period. Logistic regression again found that the pre-to-post change did not differ significantly between intervention and usual care groups (OR for interaction term, 0.95; 95% CI, 0.70 to 1.30).

We also used patient level data to assess adequacy of pharmacotherapy (continuous antidepressant treatment for at least 12 weeks within a 114-day period [HEDIS criteria]). The last row of Table 2 showed that 67.14% (n = 190) of intervention compared to 63.53% (n = 169) of usual care patients had adequate pharmacotherapy in the pre-study period. Once again, the pre- to post- change did not differ between intervention and usual care groups (OR for interaction term, 0.82; 95% CI, 0.43 to 1.55).

For every measure examined (rate of new diagnosis of depression, prescription of new antidepressant medication, or adequacy of pharmacotherapy), we also used group by time logistic regression analyses to test whether effect of the intervention differed between the GHC and Dean sites. For all measures, there was no significant group $\times$ time $\times$ site interaction, indicating that training effects did not differ across sites.

DISCUSSION

We evaluated whether a physician education program would result in better quality of primary care for depression. Randomization of physicians in an earlier depression intervention trial on a large sample of frequent users of medical services provided us an opportunity to assess whether educating PCPs would improve depression management for their non-study patients. We found that time trends in diagnosing depression and initiating pharmacotherapy did not differ between intervention physicians and their usual care colleagues. Duration of antidepressant treatment after initiation of pharmacotherapy also did not indicate a training effect. These results are likely to apply to PCPs in a variety of practice settings because we included both internal medicine and family medicine specialties, HMOs in the Northwest and Midwest regions of United States, and both for-profit and not-for-profit health plans.

The intensity of training was moderate in this study, relative to other educational programs for practicing physicians.[7–16] The educational program occurred locally at each clinic in small interactive groups and was tailored to meet the busy practice demands of the PCPs. It is interesting to note that an educational program provided in the recent British randomized trial (albeit to a smaller number of PCPs) was more than twice as long as our initial session and still found no training effect. It is also likely that a much more intensive educational program would have resulted in less PCP participation and the findings would not be as generalizable to typically busy PCPs who face many competing demands. In addition to small group sessions, academic detailing, and role-play, our educational program in the original randomized trial on frequent users also provided case-based training. In this manner, intervention physicians could gain knowledge of optimal depression management by collaborating with case managers and psychiatrist in caring for their patients.

We should mention 2 issues regarding our ability to detect meaningful changes in practice. First, our study did not have sufficient statistical power to detect small differences between intervention and usual care physicians. As indicated by the confidence intervals for interaction terms above, our sample size was sufficient to detect

15% to 30% differences in probability of new diagnosis and/or prescription and 40% to 50% differences in probability of adequate antidepressant treatment. Second, one might question whether physicians saw a sufficient number of patients with undetected depression to allow some room for improvement in diagnosis and treatment rates. Epidemiologic studies suggest a prevalence of depression of 5% to 8% among consecutive primary care patients.[21] Given a new diagnosis rate under 2% in our sample, we suspect that there were sufficient "missed" cases to allow significant room for improvement. We also did not emphasize case-finding of depressed primary care patients. Therefore, it may not be surprising that the physician diagnosis of depression did not increase. However, we used 2 measures of antidepressant treatment as well, rate of initiation of antidepressant and adequate duration of continuous antidepressant treatment, to measure physician practice change. These also did not improve after training.

Over the last 1 1/2 decades, various randomized controlled trials in general health care settings have demonstrated that primary care providers can provide significantly better management of depression when supportive services are organized to this attain this goal.[22–29] A key feature common to these effective interventions is the reorganization of primary care teams to allow for systematic and proactive monitoring of patient progress to ensure good clinical outcomes, in addition to physician training. In a previous quasi-experimental evaluation of physician education, we found that improved practices for depression management, evident during a randomized intervention, did not continue when we ended the supportive services that helped PCPs to deliver optimal care.[30]

Because we used the same design and methods as our earlier intervention study on frequent users,[17] the contrast between improved outcomes from the original study and the lack of disseminating improved practices to non-study patients is especially illuminating. The noteworthy distinction again is that the initial depression intervention program provided not only physician training but also added case managers to screen for depression and to monitor treatment response. Primary care services were thus reorganized to achieve systematic screening and systematic treatment. In a proactive manner, these case managers supported primary care treatment by monitoring patient treatment response, medication adherence, and problematic side effects at 2 and 10 weeks (and if needed, 18, 30, and 42 weeks). After each monitoring contact and consultation with the study psychiatrist, the case manager gave PCPs a progress report of their patients. If there was no patient progress, these case managers would alert the physician to problems with medication adherence or offer recommendations made by the study psychiatrist to change or augment treatment. Not only would the case managers help ensure that recommendations for treatment adjustment would be enacted, they assisted the patients in navigating the complex medical delivery system to receive needed treatment. In this manner, systematic follow-up of depressed patients would not be overlooked, as PCPs face daily challenges of urgent and competing demands for their attention and resources.

We would like to emphasize that our results do not imply that physician education has no role in improving quality of primary care. Physician education is a necessary but insufficient strategy. Much effort has been devoted to formulating scientifically sound clinical guidelines resulting in the rapid proliferation of evidence-based guidelines for a multitude of clinical conditions. If better patient outcomes were the goal, we need to target resources beyond simply disseminating information and educating physicians on optimal practices. Instead, the primary care services can be redesigned and bolstered to enhance PCPs to deliver quality of care.

A comprehensive system for reorganizing care delivery for chronic illness has been described and tested by Wagner et al.[31,32] In addition to education of providers and redesign of the primary care team as mentioned above, patient education and clinical information systems are necessary for improving patient outcomes. Clinical information systems such as electronic medical records and disease registries can help primary care providers deliver optimal treatment at the point of visit.[33,34] Clinical opinion leaders can consult on difficult cases or provide feedback for ways to achieve higher quality of care. Redesigning primary care teams to include members such as case managers or pharmacists can help provide better patient education, monitor adherence to treatment, and monitor patient progress proactively.[35] Lastly, but indispensably, informing patients about practice guidelines and activating them to discuss this with their PCP may help establish a collaborative and therapeutic partnership. In this concerted manner, well-trained PCPs can deliver better quality care and help informed patients achieve good outcomes.

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