

HOW DO PRIMARY CARE PRACTITIONERS  
MANAGE DEPRESSION:  
TREATMENT OR REFERRAL?

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## EXECUTIVE SUMMARY

This study investigates the extent to which variations in treatment and referral patterns for adult patients with diagnosed symptoms of depression seen in primary care practices are explained by practitioner characteristics such as training, age, gender and knowledge about depression; practice characteristics, including size, patient volume and payor mix; and service area characteristics, such as availability of specialty mental health services and relative rurality.

Primary data were gathered by means of a telephone survey of primary care practitioners in Maine, including family and general practice M.D.s and D.O.s. general internists, nurse practitioners and physicians assistants (n = 267). Secondary data on the availability of mental health specialty services were gathered from state licensing agencies. Bivariate and multivariate analysis are used.

Although only 15 percent of respondents occasionally or frequently use the guidelines established by the AHCPR for the treatment of depression, most treatment patterns appear to be consistent with the guidelines. There is no significant difference between urban and rural PCPs in the numbers of depressed patients seen as a percentage of total patient volume. Major barriers to referral to a specialty mental health provider are long waiting time for an appointment, lack of available services, patients' unwillingness to use services, and reimbursement issues. Multivariate analysis indicates that practitioner characteristics measuring knowledge and attitudes, as well as the patient's unwillingness to be treated by a mental health provider, are significantly related to treatment and referral patterns while practice and service area characteristics are not ( $r^2 = .31$ ).

Treatment of rural patients with symptoms of depression is more likely to be improved by targeting primary care practitioners' medical education, especially continuing medical education or the kinds of outreach associated with area health education centers (AHECs), than by efforts to increase the supply of specialty mental health providers in rural areas. Patient education may also be effective.

## Introduction

Interest in the management of major depression by primary care practitioners has increased since the release of guidelines for the treatment of depression by the Agency for Health Care Policy and Research (Depression Guideline Panel 1 993; Main, et al. 1 993; Sturm and Wells 1994; Rost, et al. 1995). Since many rural communities lack specialty mental health services, primary care practitioners provide a significant portion of mental health care in rural America (Knesper, et al. 1 984; Stuve, et al. 1 989; Regier, et al. 1993). With few mental health specialist to whom they can refer patients, rural practitioners may treat more cases of depression on their own than their urban counterparts. While considerable attention has been directed toward the failure of primary care physicians to detect the presence of depression in their patients, little empirical research has investigated how rural primary care practitioners deal with depression once they have identified it (Jones, et al. 1 987; Wells, et al. 1 989; Robbins, et al. 1994; Higgins 1994).<sup>1</sup>

In this study, we address this question, focusing on how primary care physicians, physicians' assistants and nurse practitioners manage adult patients with depression. How much therapy do these practitioners provide themselves? How often do they prescribe anti-depressant medications? How often do they refer patients to mental health specialty providers, and what problems do they encounter in making such referrals? In addition, we seek to identify the determinants of these behaviors in terms of practitioner characteristics, practice characteristics, and the availability of mental health specialty providers.

How these practitioners deal with depressed patients is of interest not only from the perspective of public policies dealing with the distribution of scarce mental health resources, but also from the perspective of insurers who may bear the cost of untreated or under-treated cases in the form of increased use of general health services, and of depressed patients and their families, who may have concerns about the quality and effectiveness of care provided in the general health setting (Sturm and Wells 1 994).

## Background

An estimated two-thirds of U.S. patients with clinical symptoms of mental illness receive no care at all for such symptoms (Regier, et al. 1993). Of those who do receive formal treatment, approximately 40 percent receive care from a mental health specialist, and 45 percent from the general medical sector. These national estimates have led to a suggestion that primary care practitioners (PCPs) are a “de facto” mental health service system (Regier, et al. 1993). While there is little question that some psychiatric disorders such as schizophrenia must be cared for by mental health specialists, others, including depression can be treated in the primary care setting by PCPs who are knowledgeable. For a variety of reasons, many PCPs may prefer to refer many of their depressed patients to specialty mental health providers. There are a variety of factors that will determine whether a PCP chooses to treat a patient with symptoms of depression or to refer to a specialty mental health provider.

## Practitioner Characteristics

Prior to the treatment or referral decision, the depression must be recognized as such. Several studies have indicated that primary care physicians fail to detect depression in 50-75 percent of patients with depression (Jones, et al. 1 987, Wells, et al.

1989, Schulberg, et al. 1985, Kessler, et al. 1985). While none of these studies reports an urban-rural difference in under-diagnosis, Rost, et al. (1995), found that rural family practice physicians detected only 24 percent of depressed cases that were independently identified by a diagnostic inventory. Moreover, rural residents' greater reliance on primary care practitioners (PCPs) for mental health treatment suggests that underdiagnosis in the primary care setting may lead to an urban-rural difference.

Beyond the issue of diagnosis, a growing body of evidence suggests that mental health services provided by primary care practitioners are less effective than those provided by mental health specialists. Sturm and Wells (1994) found that, although treatment in the primary care setting was less expensive, long term remission rates were poor. Rost, et al. (1995) found that rural family practice physicians were only half as likely as their urban counterparts to detect depression, and their patients were half as likely to be in remission at a five-month follow-up as those in urban settings. Recognition of mental illness and a determination to treat or refer patients exhibiting such symptoms may be determined, in part, by clinician training, attitudes and beliefs. Using primary data from primary care physicians, physicians' assistants, and nurse practitioners (n = 1 78), Main, et al. (1 993) concluded that training in depression and beliefs about self-efficacy in treating depression may profoundly influence the degree to which clinicians recognize depression in primary care. Anecdotally, some PCPs have reported that they did not become aware of the prevalence of depression in the primary care setting until a year or more after their residency was completed and regretted that they had not received more training. Thus, years of experience is another characteristic of the PCP that may explain whether he or she chooses to treat or refer. Once the need for such knowledge has been acknowledged by a practicing PCP, a search for resources may lead him or her to the AHCPH guidelines for the treatment of depression. Thus, familiarity with these guidelines may be an indicator of knowledge about depression.

referral to a specialty mental health provider may be preferable to treatment by a PCP. Indeed, while Anderson and Harthorn (1989) found that primary care practitioners' ability to recognize 14 different mental disorders was indistinguishable from that of mental health practitioners for several disorders, primary care practitioners tended to favor referral to specialty services as the treatment of choice.

### ***Patient Characteristics***

Failure to record a diagnosis of depression is not necessarily an indication that the provider did not recognize it, and may be related to the severity of the symptoms. Using a national sample, Jencks (1985) analyzed the relationship between diagnosis and treatment either by psychotropic medication or "therapeutic listening." He found that the rate of physician recognition of mental distress was substantially higher than the rate of diagnosis, and that in 58 percent of cases where a mental health treatment was provided, no mental health diagnosis was recorded. Simon and Von Korff (1995) found that patients with "unrecognized" depression had milder symptoms and were less disabled than recognized cases. In a meta-analysis of unrecognized mental illness in primary care, Higgins (1994) found that improving the recognition of mental illness among primary care physicians made no difference in psychiatric symptoms at follow-up, concluding that most psychiatric disorders in primary care resolve on their own. In addition, lack of insurance coverage for mental health treatment or the stigma of a mental health diagnosis are also

cited as contributing to under-diagnosis (American Academy of Family Practice 1 994; Rost, et al. 1994; Susman 1995). While there is no direct evidence that these factors affect rural more than urban practitioners, studies indicate that rural residents have fewer health insurance benefits than their urban counterparts (Frenzen 1 993; Hartley, Quam and Lurie 1 994). In addition, the greater homogeneity and intimacy of rural communities may exacerbate the stigma associated with the diagnosis.

The access barrier associated with the stigma of mental illness is not limited to diagnosis. Whether or not a specific diagnosis is recorded, many residents of rural areas are unwilling to use specialty mental health services because of concerns about confidentiality (Rost, Humphrey and Keller 1 994, Berry and Davis 1 978, Fehr and Tyler 1987, Wagenfeld, et al. 1994). Based on 350 responses to a survey of family practice physicians, Orleans, et al. (1985) found that patient resistance was a major barrier to effective specialty care treatment. A simple fact of rural life is that it is very difficult to maintain anonymity when neighbors recognize one's pickup truck parked outside of the mental health center. In the belief that the patient will not follow through on a referral due to stigma and confidentiality concerns, PCPs may underdiagnose and/or choose not to refer a patient to a mental health provider.

### ***Practice Characteristics***

Certain characteristics of a PCP's practice may be expected to influence his or her decision about how to manage depressed patients. Those in larger practices may have increased opportunities to spend the time necessary to treat depression and be less likely to refer. In addition, if a mental health provider is located on site, both travel time and patient resistance due to stigma or confidentiality concerns may be diminished, and the

likelihood of referral may increase. Since it may be difficult to find mental health providers who will accept Medicaid patients, PCPs in practices that accept significant numbers of Medicaid patients may be less likely to refer and more likely to treat.

#### Service Area Characteristics

As mentioned earlier, the lack of mental health specialty providers represents a major barrier to mental health treatment in many rural areas. Lambert and Agger (1995) found that most urban-rural differences in utilization of mental health services by AFDCeligible Medicaid enrollees were explained by the supply of mental health specialty providers in the area. While a lack of local providers does not prohibit utilization of mental health specialty services, it adds distance and travel time as barriers to access.

Moreover, while PCPs may prefer a referral to treating a depressed patient themselves, referrals are not always perceived as successful by the referring practitioner. The failure of rural primary care practitioners to refer patients with mental health problems may be explained, in part, by a lack of communication between the mental health and medical sectors. The outcomes of such referrals were assessed by the referring rural physicians in a study by Rosenthal, et al. (1991). The only factor found to be related to successful referral outcomes was communication with the referring physician initiated by the psychotherapist. Poor coordination between the primary care and specialty mental health sectors is cited as a barrier to effective treatment by Orleans, et al. (1985). Schulberg (1987) confirms the problem of coordination and calls for research on organizational characteristics that impede or facilitate collaboration between generalists and specialty mental health practitioners.

Additional barriers to referral are related to characteristics of some mental health providers. For example, in many rural areas, mental health care is only available through a community mental health center (CM HC), whose mission may require it to devote most of its resources to severely mentally ill individuals. A combination of federal block grant funding and deinstitutionalization of the severely mentally ill has shifted the emphasis of CMHCs away from community-oriented services, leaving few resources available for dealing with situational mental health problems or even major depression (Wagenfeld 1990; Hargrove 1987). While community mental health centers may continue to accept patients other than the chronically and severely mentally ill, their reduced capacity to treat such patients often results in long waiting lists. When primary care practitioners are told that their patients must wait two or more months for an appointment, they may eschew such referrals in favor of treating mental health problems themselves. While private mental health providers with acceptable waiting lists may be available locally, they often refuse to accept, or are ineligible for, Medicaid or other forms of insurance, thus posing an additional barrier (AAFP 1994).

In summary, when presented with a depressed patient the rural primary care practitioner faces a difficult choice. Numerous barriers may argue against referral to a mental health specialty provider. While the AHCPH guidelines have created the opportunity for effective treatment in the primary care setting, research suggests that this has not been effective. While the PCP may be aware of the AHCPH guidelines for the treatment of depression, he or she may not have time for the frequent visits for counseling recommended by the guidelines. Since prescribing antidepressant medications may not demand as much of the PCP's time as counseling, it is a common treatment

strategy in the primary care setting. Hohman, et al. (1991) report that PCPs are the major prescribers of minor tranquilizers and antidepressants. Unfortunately, recent research has found that, when PCPs prescribe antidepressants, the regimen often fails to meet AHCPH guidelines, either due to short duration or low dose (Rost, et al. 1995).

This study is not designed to evaluate the effectiveness of treatment for depression in the primary care setting. Rather, it seeks to determine the extent to which primary care practitioners are treating depression themselves and the extent to which the factors described above affect referrals to mental health specialty providers. While most of the research cited above suggests an incentive for the PCP to refer to specialty providers, the barriers to referral may counteract that incentive. This study seeks to understand the outcome of this conflict between opposing incentives, and to determine if specific characteristics of the provider, the practice or the service area will influence the choice.

Appropriate policy strategies for improving access to quality care for depression will differ dramatically, depending on which groups of characteristics are found to be significant influences. Provider characteristics may be influenced through medical education, local supply of mental health services may be influenced by policy strategies that address incentives for mental health providers to locate in underserved areas, and practice characteristics may be affected by accelerating the growth of managed care and provider networks.

We hypothesize that PCPs in regions with few mental health providers will encounter more cases of depression, provide more treatment themselves and make fewer referrals than PCPs in regions with a greater supply of mental health providers.<sup>2</sup> PCPs who report long waiting times for an appointment with a mental health provider and

patient resistance to receiving treatment in a mental health setting are also more likely to treat depressed patients themselves. Where the mental health services are available on-site (co-located), we expect PCPs to provide less treatment themselves. We also hypothesize that PCPs with greater patient volume will provide less treatment themselves, referring earlier and more frequently.

We expect that PCPs with significant training and knowledge about depression will be treating more cases of depression themselves, rather than referring them to mental health specialists. Similarly, those who believe that depression is a significant problem in primary care are likely to be more knowledgeable about the diagnosis and treatment of depression. Believing that they can be effective treating it themselves, such PCPs are likely to treat more cases themselves, referring fewer.

We acknowledge that the structure of the mental health services delivery system in a region affects the balance between the incentives to treat and the incentives to refer. For example, while there may be a community mental health center nearby, if that center has a reputation for treating only persons with chronic or severe mental illness, PCPs may not refer to it. On the other hand, a prior history of information exchange may exist between primary care and mental health providers. These historical and structural circumstances may influence PCPs to refer to a more distant provider, or to treat most depressed patients themselves. While we intend to investigate these regional characteristics in greater detail, that analysis is beyond the scope of this paper.

## **Methods**

### *Sample*

Lists of all family practice and general internal medicine M.D.s and D.O.s, and general practice N.P.s and P.A.s were obtained from the Maine licensing authorities and from professional organizations. Where multiple lists were obtained, systematic cross checking against telephone directories and provider staff rosters was used to arrive at a single list for each group that appeared to be the most current and accurate. In all, we identified 964 PCPs practicing in Maine. Project funds did not allow surveying all of them so a sampling strategy was used. Since characterizing referral patterns in local areas was to be part of the analysis, we chose to survey all PCPs in selected geographic areas.

Maine is divided into 62 Primary Care Analysis Areas (PCAAs) and 6 mental health service areas. Since referrals were expected to follow predictable geographic patterns, with most referrals made either within a PCAA, to adjacent PCAAs, or to an urban area, a random selection of PCAAs would leave gaps in our understanding of referral patterns. We chose to limit our survey to PCPs in the 38 PCAAs in central Maine, eliminating two southern mental health service areas and one northern mental health service area. In addition to the advantage of assuring that the entire area surveyed was contiguous, this strategy eliminated the southern Maine regions where managed care penetration is greatest. We assumed that greater managed care penetration would affect referral patterns and might also affect how much mental health care is provided by PCPs. Elimination of the northern region, which consists solely of Aroostook County, also seemed justified by the dramatically different geography of that region. Most of the PCAAs in Aroostook County are adjacent to Canada to the east or north, and adjacent to

unorganized territories to the west and south. This pattern is likely to restrict the options for referrals. Moreover, travel distances in Aroostook are greater and roads generally poorer than in many other areas of the state. For these reasons, we believe that our ability to generalize our findings might be compromised if our sample included Aroostook.

This sampling strategy generated a list of 319 MDs, 55 DOs, 90 PAs and 45 NPs for a total of 509 practitioners to be surveyed. In the course of the survey we removed 141 individuals from the list who had died, retired, left the area, or no longer practiced primary care.<sup>3</sup> Telephone surveys were completed during the spring and summer of 1995. To enhance response rate, endorsements were obtained from all relevant professional organizations. In addition, physicians were recruited throughout the survey region to act as regional contacts for respondents who wanted to talk to a familiar colleague regarding the survey. These regional contacts also encouraged their colleagues to participate in the survey. When we were unable to bring our response rate above 65 percent, despite up to 15 call backs to some PCPs, we resorted to a mailed instrument for a selected group of non-respondents we thought might respond to that approach. The 35 mailed surveys returned enabled us to achieve an overall response rate of 73 percent.

### *Measures*

Survey respondents were asked to report on personal and practice characteristics, as well as details about how they treat and refer patients with symptoms of depression. Significant training in the treatment of depression is defined by an algorithm. If the respondent had experience diagnosing and treating depression during training “about as much as for a common disease” or “more than that spent on other common diseases”, this was considered significant training. Similarly, if the respondent had continuing

medical education experiences “about as much as for other diseases or problems” or “more than that for other diseases or problems”, this was also considered significant training.

In addition to a question about familiarity with the AHCPR guidelines for the treatment of depression, respondents were asked if they routinely screen for depression, and if they use a screening instrument.

The total number of depressed patients seen per week was calculated as the sum of those patients for whom a diagnosis of depression was recorded and those who exhibited symptoms of depression, but for whom a diagnosis of depression was not recorded. This approach acknowledges that a substantial number of cases of depression are not formally diagnosed for a variety of reasons including stigma, reimbursement, and inability to follow up the diagnosis with a referral to a mental health specialty provider (Rost, et al. 1994). To quantify how much of a PCP’s practice is devoted to care of depressed patients, we divided the total number of depressed patients seen per week, as defined above, by the total number of patients seen per week. Elsewhere in the literature, this ratio has been estimated at from 9 percent (Schulberg, et al. 1985, Barrett, et al. 1988) to 20.9 percent (Zung, et al. 1993).

Respondents were asked a series of questions about factors that hindered their ability to treat patients with depression and factors that hindered their ability to refer such patients to specialty mental health services. A three-point scale indicated whether each factor hindered the PCP “not at all”, “somewhat” or “a great deal.”

Since the unit of analysis is the practitioner, no data are available regarding patient characteristics. However, one variable that captures the practitioner’s perception of his

or her patients' characteristics will be investigated at the bivariate level of analysis: the extent to which patient unwillingness to be treated in the mental health setting hinders the PCP's ability to make a referral.

To quantify the local supply of mental health services, we use the number of persons per mental health practitioner. Counties were not chosen as the geographic unit because counties in Maine are large, and tend to encompass mixed urban and rural populations. Instead, we have used primary care analysis areas (PCAAs). These are smaller geographic units developed by the Bureau of Primary Care for designating primary care shortages. The ratio of persons to practitioners is adjusted to account for the supply in adjacent PCAAs. Since the urban areas within the region surveyed are among the smallest MSAs in the U.S., we expected urban-rural differences among the variables of interest to be small.

### **Analytic Strategy**

While variations between urban and rural areas for some of the key variables are of interest, the focus of our analysis is on the question of whether a PCP provides treatment himself or herself, or refers the patient to a mental health provider. The variable that best captures this question is measured by the question: "What percentage of your patients with depression do you treat yourself without referring?"<sup>4</sup> Bivariate and multivariate analysis is focused on this variable.

### **Findings**

Table 1 presents descriptive characteristics of the 267 PCPs who responded to the survey. In general, approximately two-thirds of our respondents indicated that they had significant training in depression. The notable exception is nurse practitioners, only one

third of whom had such training. PCPs reported that 16.3 percent of their patients exhibited symptoms of depression. For physicians, the reported prevalence rate was 17.3 percent, clearly in the upper range of prevalence rates reported in previous studies (Schulberg, et al. 1985, Barrett, et al. 1988, Zung, et al. 1993). The high prevalence may be due to the inclusion of patients with symptoms for whom a diagnosis is not recorded. On average, the respondents in our sample entered a diagnosis for about 65 percent of the patients they saw with symptoms of depression.

Factors that hinder the PCP's ability to treat depression are shown in Figures 1 and those that hinder the PCP's ability to treat depression are shown in Figure 2. These subjective responses indicate that some patients are not only unwilling to be seen by a mental health specialist, but resist mental health treatment in the primary care setting as well. The unavailability of a consultant appears to hinder many PCP's ability to treat depression themselves. In addition, the lack of available services and long waiting times appear to be major factors hindering referrals for a large majority of those surveyed.

One group of questions was designed to assess whether PCPs are familiar with the AHCPR guidelines for the treatment of depression and whether they follow them. Although only 15 percent of our respondents use the AHCPR guidelines and only 45 percent have ever seen them, we found that most respondents (64 percent) do some sort of screening for depression. Although our survey did not assess whether medications were used according to the guidelines, 82 percent of our respondents reported seeing depressed patients 2-4 times per month as recommended by the guidelines.

Bivariate statistics comparing urban to rural areas, and comparing areas with a low supply of mental health providers to those with a high supply are presented in Appendix

**TABLE 1**  
**Characteristics of Primary Care Physicians, Physicians' Assistants and**  
**Nurse Practitioners**  
(Standard deviations in parentheses, n = 267)

	Physicians (n = 192)	Physicians' Assistants (n=51)	Practitioners (n=24)	Total (n=267)
Percent female	25.5	35.3	83.3	32.6
Average years in primary care	13.9 (9.1)	10.9 (7.4)	10.5 (6.0)	13.0 (8.64)
Percent salaried	41.1	74.5	79.2	50.9
Percent with significant training in treating depression	66.7	68.6	37.5	64.4
Percent who screen for depression	64.1	62.7	75.0	64.8
Average patients seen per week	87.7 (40.3)	73.0 (33.1)	70.2 (33.1)	83.3 (38.9)
Patients with depression seen per week	13.5 (13.3)	9.9 (12.6)	8.6 (6.8)	12.4 (12.8)
Antidepressant prescriptions per week	7.47 (9.6)	5.32 (8.4)	3.61 (3.33)	6.75 (9.08)
Percentage of depressed patients treated without referral	51.4 (28.3)	24.2 (28.1)	20.0 (25.0)	43.4 (30.7)
Percent of patients exhibiting symptoms of depression	17.3 (16.0)	14.3 (13.1)	13.0 (9.1)	16.3 (15.0)
Percent of depressed for whom diagnosis is recorded	66.0 (26.5)	58.4 (31.9)	62.0 (30)	64.1 (28.1)
Average number of practitioners in Practice	5.5 (8.5)	6.1 (7.7)	7.7 (11.5)	5.83 (8.62)
Percent of patients Medicaid reimbursed	19.0 (14.4)	28.5 (13.2)	28.6 (20.9)	21.6 (15.5)
Percent with Mental Health Service Collocated	26.6	41.2	33.3	30.3
Percent in rural location	51.0	74.5	37.4	54.3

Tables 1 and 2 respectively.<sup>5</sup> These tables illustrate that PCPs in rural or low supply areas do not differ from those in urban or high supply areas by any relevant indicators other than practice size and use of consultants. No significant differences between urban and rural respondents or those in high supply and low supply areas are observed in number of patients with depression, use of medications, nor percent of patients treated without referral, indicating that the key service area characteristic (supply) does not explain differences in treatment and referral.

The greater use of consultants for advice regarding medications by PCPs in low supply areas is surprising. Some providers have indicated that use of a consultant in an area of high supply is likely to mean use of a consultant who is within traveling distance for the patient. Such consultants (predominantly psychiatrists) might suggest a referral rather than a consult, and PCPs may be unwilling to turn their patients over to a psychiatrist due to lost revenue. Discussions with psychiatrists in the region surveyed indicate that this explanation is unlikely, since virtually all of them are overworked and have no incentive to increase their patient loads.

An alternative explanation may be found if we assume that patients seeking treatment for mental health problems from PCPs in areas of high mental health service supply are less severely distressed than those seeking such care in areas of low supply. In high supply areas, those with more severe symptoms, and/or comorbidities, may find their way directly to mental health providers, while in low supply areas, they do not. Thus, seeing more severe cases, PCPs in low supply areas have a greater need for consultation. Another explanation suggested by some providers is that many primary care practitioners depend upon drug salesmen for information on proper dosage and duration

of antidepressant prescriptions. In more remote areas, these salesmen are less likely to visit on a regular basis, increasing the need for other sources of information, such as consultations.

### **Hypothesis Testing - Bivariate**

Table 2A presents bivariate statistics for practitioner characteristics using a dichotomized version of the dependent variable, percentage of patients with depression treated without referral. As a continuous variable this percentage ranged from zero to 100 percent, with 49 percent of the observations falling at or below forty percent. Conversion to a dichotomous variable facilitates presenting findings in tabular form.

Physicians treat significantly more patients with depression themselves, as compared with physicians' assistants and nurse practitioners. While female practitioners are less likely to treat a high number of cases of depression, the difference was not significant among physicians. This finding may be partially explained by the greater number of females among physicians assistants and nurse practitioners, who are less likely to treat depression than physicians.

Training in depression is only marginally significant in explaining the dependent variable, however, the perception by PCPs that lack of knowledge hinders their ability to treat depression was found to be significant. This finding suggests that our training variable, which is based on formal training in medical school, residency and continuing medical education, does not capture the sources of knowledge that these practitioners feel is relevant to treating depression.

While the belief that depression represents a major proportion of primary care is not significantly related to treatment, the non-significant difference (48.2 percent vs. 37.7

**TABLE 2A**  
**Characteristics of Primary Care Practitioners**  
**by Percentage of Depressed Patients Treated without Referral**  
(Standard deviations in parentheses, n = 267)

	All PCPs (n=267)		Physicians Only (n=192)	
	Low 40% or less	High More than 40%	Low 40% or less	High More than 40%
Percent physicians	56.1	86.9***	--	--
Percent female	41.5	24.1**	31.5	21.8
Years in primary practice	12.2 (7.3)	13.7 (9.7)	12.9 (7.5)	14.5 (9.9)
Percent with significant training in Depression	59.2	69.3°	61.6	69.7
Percent who screen for depression	60.0	69.3	60.3	66.4
Average patients seen per week	78.6 (39.1)	87.7° (38.3)	84.9 (41.7)	89.4 (39.3)
Percent who believe depression represents a major proportion of primary care	37.7	48.2	43.8	49.6
Percent who believe treatment by PCPs is effective for a large proportion of depressed patients	81.2	97.0 ***	80.2	98.3 ***
Antidepressant prescriptions per week	5.6 (7.2)	7.7° (10.4)	7.2 (8.5)	7.6 (10.2)
Percent who claim unavailability of consultant hinders ability to treat "a great deal"	36.2	38.2	35.2	38.1
Percent who claim lack of knowledge hinders ability to treat "somewhat" or "a great deal"	77.7	54.4 ***	70.0	52.5°

\*\*\* p < .001 \*\* p < .01 \* p < .05 ° p < .10

**TABLE 2B**  
**Patient, Practice and Service Area Characteristics**  
**by Percentage of Depressed Patients Treated without Referral**  
(Standard deviations in parentheses, n = 267)

	All PCPs (n=267)		Physicians Only (n=192)	
	Low 40% or less	High More than 40%	Low 40% or less	High More Than 40%
<b>Patient Characteristics</b>				
Percent of patients exhibiting symptoms of depression	15.3 (15.5)	17.3 (14.5)	17.3 (18.2)	17.4 (14.7)
Percent of depressed patients for whom diagnosis is recorded	61.1 (29.8)	66.8 (26.2)	65.0 (28.5)	66.6 (25.4)
Percent reporting patient unwillingness to access mental health hinders referrals “a great deal”	14.8	19.9	15.5	22.0
<b>Practice Characteristics</b>				
Average number of practitioners in practice	6.8 (10.1)	4.9° (6.9)	6.2 (10.2)	5.1 (7.2)
Percent of patients Medicaid reimbursed	23.1 (17.7)	20.2 (13.2)	18.3 (16.0)	19.3 (13.5)
Percent with mental health service collocated	37.7	22.8**	34.2	21.8°
<b>Service Area Characteristics</b>				
Percent in rural location	53.1	55.5	49.3	52.1
Mean persons per mental health provider in PCAA	1482 (1517)	1453 (1478)	1207 (855)	1437 (1534)
Percent who report lack of services hinders ability to refer “a great deal”	50.0	58.1	49.3	57.6
Percent reporting long waiting time hinders referrals “a great deal”	50.4	47.4	50.7	45.8

\*\*\*p<.001    \*\*p<.01    \*p<.05 ° p<.10

percent,  $p = .11$ ) led us to decide that this variable should be included in the multivariate model. The belief that PCPs can be effective in treating depression is significantly more prevalent among those who treated more cases of depression themselves (97.0 percent vs. 81.2 percent). In general, it appears that knowledge and beliefs are significantly related to treatment by PCPs.

We also found that respondents with significant training are more likely to believe that depression represents a major portion of the problems of primary care (52.3 percent vs. 26.3 percent,  $p < .001$ ), and that PCPs who feel that depression is a major problem in primary care report higher rates of depression than those who feel it is not a major problem (20.3 percent vs. 13.3 percent,  $p < .001$ ). This pattern suggests that reported prevalence of depression in primary care may be influenced by practitioner characteristics such as training, knowledge and attitudes.

Table 2B presents bivariate statistics for patient, practice and service area characteristics. While a greater proportion of PCPs who treat a lot of depression themselves reported that patient unwillingness to access mental health services hinders referrals “a great deal,” this difference was not significant. None of our service area characteristics are significantly related to treatment of depression in the primary care setting. As hypothesized, those with mental health services available on site are less likely to treat depression themselves ( $p < .01$ ). Our finding that PCPs who treat a greater percentage of depressed patients themselves are in smaller groups, though only marginally significant, is puzzling. A possible explanation is that PCPs with mental health services co-located included the mental health providers in the reported total group size.

## Multivariate Analysis

The multivariate analysis of factors associated with treatment and referral patterns uses the continuous dependent variable: “What percentage of your patients with depression do you treat yourself without referring?” Table 3 presents findings from two ordinary least squares regressions. The first model includes all variables needed to test for hypothesized effects. The second uses a more parsimonious set of independent variables selected based on findings from the bivariate analysis.

In general, variables indicating the structure of the local service system and characteristics of the practice setting are not significant, while variables describing characteristics of the practitioner and his or her patients are. We chose to use a continuous variable, the ratio of population to mental health specialty providers in the local primary care analysis area (PCAA), adjusted for the supply in adjacent PCAAs, as a measure of the structure of the mental health system. Since this variable was closely associated with the urban-rural variable we did not include both in the full model.<sup>8</sup>

Similarly, neither patient volume, availability of mental health counseling on site, nor Medicaid reimbursement mix are significant in either multivariate analysis. Since collocation of mental health services was found to be significant in the bivariate analysis, it is likely that one of the other independent variables is “masking” this effect in the multivariate model.<sup>7</sup> In general, however, it appears that practice characteristics do not play a major role in determining treatment and referral behavior.

On the assumption that PCP perception of the availability of mental health services might differ from our measure of mental health provider supply, we included a variable in the analysis derived from the question: “How much does lack of services hinder your

**TABLE 3**  
**Ordinary Least Squares Regression, Percentage of Depressed Patients Treated Without Referral**  
(n=228)

	Full Model		Reduced Model	
	Coefficient	Standard Error	Coefficient	Standard Error
Sex	-5.58	3.97	-	-
Physician	15.2 ***	4.34	17.24 ***	4.09
Years in Primary Practice	.115	.227	-	-
Significant training in depression	-.543	3.92	-	-
Average patients seen per week	.0313	.0468	.047	.045
Practitioner reports that lack of knowledge hinders ability to treat patients with depression	-9.77 **	3.50	-10.02 **	3.39
Practitioner believes that depression represents a major proportion of primary care	7.04 *	3.34	5.69°	3.11
Practitioner believes that PCPs are effective in treating depression	18.03 ***	4.09	17.70 ***	3.91
Unavailability of consult hinders ability to treat depression	.154	3.99	-	-
Patient unwillingness to access mental health hinders ability to refer "a great deal"	9.53 *	4.75	9.55 *	4.61
Percent of patients Medicaid reimbursed	-.120	.120	-.135	.117
Mental health counseling is available on site	-4.12	3.92	-3.93	3.82
Lack of services hinders ability to refer	4.55	2.88	3.94	2.49
Long waiting time hinders ability to refer	-3.41	3.62	-	-
Ratio of population per mental health provider	-.00115	.00111	-.000926	.0011
		adjusted r <sup>2</sup> = .305		adjusted r <sup>2</sup> = .311

°p < .10

\*p < .05

\*\*p < .01

\*\*\*p < .001

ability to refer?” While “lack of services” may be interpreted to mean that services are too far away or that waiting times are too long, it is a general indicator of whether or not the PCP has difficulty finding providers to whom he or she can refer patients. That this variable was also non-significant confirms our finding that availability of mental health services does not significantly affect PCP treatment and referral patterns.

Several variables are included in the multivariate model as indicators of physicians’ attitudes toward depression. Both respondents who believe that depression is a significant problem in the primary care setting, and those who believe that PCPs are effective in treating depression treat a greater proportion of their depressed patients themselves. In a separate analysis, we found that these variables were also significantly associated with recognizing symptoms of depression in a higher percentage of patients. This pattern suggests that some PCPs are predisposed to look for symptoms of depression, find them, and treat them. Surprisingly, this pattern was not associated with our objective measure of training.

Our measure of training credited the respondent for training directly related to depression whether it was obtained in medical school, residency, or continuing medical education. Those with significant training by this measure differed marginally from those without significant training in the percentage of depressed patients they treated themselves without referral (45.8 percent vs 39.0 percent  $p = .093$ ). In the full model, training was not found to be related to treatment patterns. The practitioner’s perception of his or her own knowledge, however, was significant in both multivariate analyses. The three-point scale described in the previous section is a significant predictor of the percent of patients treated without referral. This finding suggests that the practitioner’s own

perception about his or her level of knowledge is a better predictor of treatment patterns than an objective indicator of training.

Lacking a direct measure of patient characteristics, we included the PCP's perception of patient unwillingness to be treated in the mental health sector as an independent variable. It's significance in both multivariate models indicates that patient characteristics other than severity or comorbidity play a role in the PCP's decision whether or not to refer to a mental health provider.

### **Training -> Knowledge -> Diagnosis -> Treatment**

Based upon both bivariate and multivariate analyses, a pattern is observed: PCPs with significant training in depression are more likely to see depression as a significant problem, less likely to see lack of knowledge as a hindrance to treating depression themselves, and likely to identify more cases of depression in their practices. Since our objective measure of training was not significant in the multivariate analysis, one must conclude that factors other than training contribute to perceived knowledge.

Not only does this attitudinal pattern apparently lead to identifying more cases of depression, it is also associated with differences in treating those cases. While those who perceive depression as a major problem in primary care do not see depressed patients any more frequently (3.29 times per month vs. 3.27 times per month,  $p = .95$ ), they spend marginally more time per visit with depressed patients (26 minutes vs. 23 minutes,  $p = .06$ ). Moreover, they write significantly more prescriptions per week for antidepressants than those who do not perceive depression as a major problem (8.53 vs. 5.32,  $p < .01$ ).

## Regional Variations

Our failure to find that the supply of mental health specialty providers is significantly related to treatment patterns of PCPs does not rule out the possibility that the structure of the local mental health services delivery system plays a role in determining treatment and referral patterns. Our indicator of supply does not account for several factors that might affect such patterns. For example, local mental health providers may not be reimbursable by some payers, may limit their practices to certain types of clients, or may work part-time. While these phenomena might be reported by respondents as factors that hinder referrals, regional variations and a small sample prevent them from exhibiting significance in a multivariate model.

In an attempt to illuminate regional referral patterns, we asked respondents to report to whom they refer their depressed patients for mental health care. The referral patterns are illustrated in Figure 3. As expected, this map shows a pattern of referrals from areas of low supply to areas of high supply. It also illustrates that PCPs in several PCAAs are bypassing local mental health providers and referring to more distant ones. For example, in eastern Maine, PCPs in Lubec, Jonesport, Milbridge and Gouldsboro make all referrals for depression to providers outside their PCAA despite the fact that each of these regions has one or more mental health providers. Another unusual pattern is that of Farmington, in western Maine, where several PCPs refer their depressed patients to Lewiston or Augusta, despite having the most mental health providers of any rural PCAA. Explanations for these anomalies are beyond the scope of this paper. However, we believe that detailed information on the reimbursement status of local providers, waiting lists, and other factors will explain these patterns.

## Conclusions

Although local or anecdotal factors may support our initial hypothesis that the supply of mental health specialty providers is associated with treatment and referral practices of PCPs, the multivariate analysis suggests that, in general, this relationship is non-significant. This finding is corroborated by a related study in which Medicaid data were used to examine service use of Medicaid enrollees with depression (Lambert, Agger and Hartley 1996). While that study found that the supply of specialty mental health providers explains use of mental health services, it also found that, in areas of low mental health provider supply, primary care practitioners did not act as substitutes for mental health providers. As in the current study, the supply of mental health providers did not affect how much treatment was provided in the primary care setting.

We conclude that individual practitioner characteristics are the major determinant of a PCP's decision to treat or refer a patient. It appears that PCPs who see depression as a major problem in primary practice, and who believe themselves capable of treating depression effectively, are those most likely to treat it, regardless of the availability of mental health specialty providers.

This finding has implications for cost and quality of treatment for depression, and, indirectly, for access to that treatment. Treatment of depression in the primary care setting has been shown to be less costly than treatment in the specialty setting, but doubts have been raised about its long term effectiveness (Sturm and Wells 1995). That study did not address whether primary care providers with significant training, knowledge, and confidence in their ability to treat depression achieved better outcomes than other PCPs, nor did it acknowledge the role of patient compliance in achieving effective

treatment. The pattern revealed in our analysis suggests that such factors may lead to differential outcomes. Thus, we may be able to improve the outcomes of treatment for depression by primary care practitioners through improvements in medical education, and through post-residency training approaches such as continuing medical education or the kinds of outreach associated with area health education centers (AHECs). Our finding that midlevel practitioners treat significantly fewer cases of depression than physicians suggests that education targeted to these providers may be a good investment. If we are able, through such interventions, to improve PCPs' knowledge and confidence regarding the treatment of depression, and thereby improve their competence in such treatment, then the lack of mental health specialty providers in rural areas need not mean a lack of access to treatment for depression. On the other hand, our finding regarding patient unwillingness to use mental health services suggests that patient education regarding mental health problems and the appropriate use of mental health services may also be needed.

### *Limitations*

This study is limited to one state, and caution should be used in generalizing our findings to other rural states. Specifically, Maine has a large proportion of solo practitioners, as well as a substantial number of community health centers. PCPs in states where group practice is more common may exhibit different behaviors. Our failure to find the supply of mental health providers to be significantly related to PCP behavior may be explained, in part, by the simplicity of our supply indicator. In this and our previous studies we have used a simple sum of provider full-time equivalencies as an indicator of the geographic availability of specialty mental health providers. This approach

makes use of existing provider listings, but fails to account for the varying scope of practice among different mental health professions, nor does it account for the reimbursement policies of various insurers regarding these professions. Further research is needed to determine a cost-effective method of estimating geographic availability with greater sensitivity. In addition, detailed qualitative studies of specific regions, based upon observed regional referral patterns, are needed to specify availability more accurately.

## ENDNOTES

1. A notable exception is the work by Rost, et al (1995).
2. Although the area surveyed includes both MSA and non-MSA regions, the supply of mental health specialty providers is highly correlated with the urban-rural variable. In a previous study, our colleagues found that urban-rural differences were explained by the supply of mental health providers (Lambert and Agger 1995). Our hypotheses and analysis will focus, therefore, on the supply variable rather than the urban-rural variable.
3. While a 27 percent error rate on such a list might lead one to question the source, surveys using the Physician Masterfile of the American Medical Association have reported error rates exceeding 50 percent (Nelsen, et al. 1994)
4. Respondents were also asked what percentage of their patients with depression are referred immediately without treatment. Since the mean response to this question was 5 percent, it was not deemed to be the most sensitive measure for analysis.
5. To convert supply to a dichotomous variable, we classified all PCAAs with 1000 or more persons per mental health provider as “low supply,” and all with fewer than 1000 persons per provider as “high supply.” By this measure, there are no urban low supply PCAAs. Of the thirty-one rural PCAAs, 23 are classified as low supply and eight as high supply. The adjusted average persons per mental health FTE in rural PCAAs is 2517 as compared to 806 in urban PCAAs.
6. When a dichotomous urban-rural variable was substituted for the supply ratio variable it was similarly non-significant.
7. Since midlevel practitioners are more likely to have mental health services on site (39.2 percent vs. 26.6 percent,  $p < .05$ ), the correlation between the dichotomous variable for physicians and that for collocated mental health services prevents both variables from achieving statistical significance in the model.

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**APPENDIX TABLE 1**  
**Urban-Rural Variations in Treatment for Depression by PCPs**  
(n = 267)

	All PCPs (n=267)		Physicians Only (n=192)	
	Urban	Rural	Urban	Rural
Number of practitioners in practice	8.36 (12.0)	3.76 *** (2.97)	7.79 (11.6)	3.43 *** (2.45)
Average patients seen per week	83.4 (40.3)	83.7 (38.1)	87.1 (40.6)	88.9 (40.3)
Percent with significant training in treating depression	68.3	61 .5	72.8	61 .9
Percent salaried	49.2	55.3	41.1	43.3
Screen for depression	65.0	64.3	68.8	62.7
Percent of patients exhibiting symptoms of depression	15.6 (14.4)	17.3 (15.9)	14.7	18.43
Patients with depression seen per week	12.5 (12.5)	12.3 (13.2)	13.0	15.0
Percent of depressed for whom diagnosis is recorded	65.5	62.1	71.5	64.6
Antidepressant prescriptions per week	6.52 (5.74)	7.07 (11 .3)	6.81	7.80
Percent who ever use consultant regarding drug type or dosage	69.2	72.7	58.7	72.9
Percent of depressed patients treated without referral	44.7 (31.0)	41.6 (30.2)	54.1	50.4

\*\*\* p < .001

\*\*p < .01

\*p < .05

°p < .10

**APPENDIX TABLE 2**  
**Characteristics of Primary Care Practitioners and Practices**  
**By Supply of Mental Health Providers**  
(Standard deviations in parentheses, n = 267)

	All PCPs (n=267)		Physicians (n=192)	Only
	High Supply <sup>1</sup>	Low Supply	High Supply	Low Supply
Number of practitioners in practice	7.25 (10.9)	3.98 *** (3.19)	6.87 (10.6)	3.58 ** (2.62)
Average patients seen per week	83.3 (38.6)	83.3 (39.5)	86.5 (38.9)	89.5 (42.3)
Percent of patients Medicaid reimbursed	20.0 (16.7)	23.8* (13.4)	17.4 (14.4)	21.3° (14.2)
Years in Primary Practice	13.1 (8.96)	12.8 (8.22)	14.0 (9.44)	13.6 (8.62)
Percent with significant training in treating depression	65.6	62.9	69.3	62.8
Percent salaried	49.7	55.3	41.4	42.9
Percent who screen for depression	61.6	69.0	61.4	67.9
Percent of patients exhibiting symptoms of depression	17.7 (16.3)	14.5° (12.9)	18.4 (17.6)	15.8 (13.2)
Percent of depressed for whom diagnosis is recorded	65.2 (27.8)	61.0 (29.1)	66.9 (26.8)	62.1 (27.6)
Antidepressant prescriptions per week	7.27 (10.1)	6.05 (7.48)	7.75 (10.5)	7.08 (8.26)
Percent who ever use consultant regarding drug type or dosage	66.2	77.6*	59.6	79.5**
Percent with mental health counseling available on site	29.1	31.3	27.2	25.6
Percent of depressed patients treated without referral	44.2 (30.6)	42.4 (30.6)	50.5 (29.4)	52.8 (26.8)

\*\*\*p < .001    \*\*p < .01    \*p < .05

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1 PCAAs with 1000 or more persons per provider are “low supply”; those with fewer than 1000 persons per provider are “high supply”. Of 31 PCAAs in the study, 23 are low supply and eight are high supply.

Figure 1

**Factors that hinder primary care practitioners' ability to treat patients with depression**

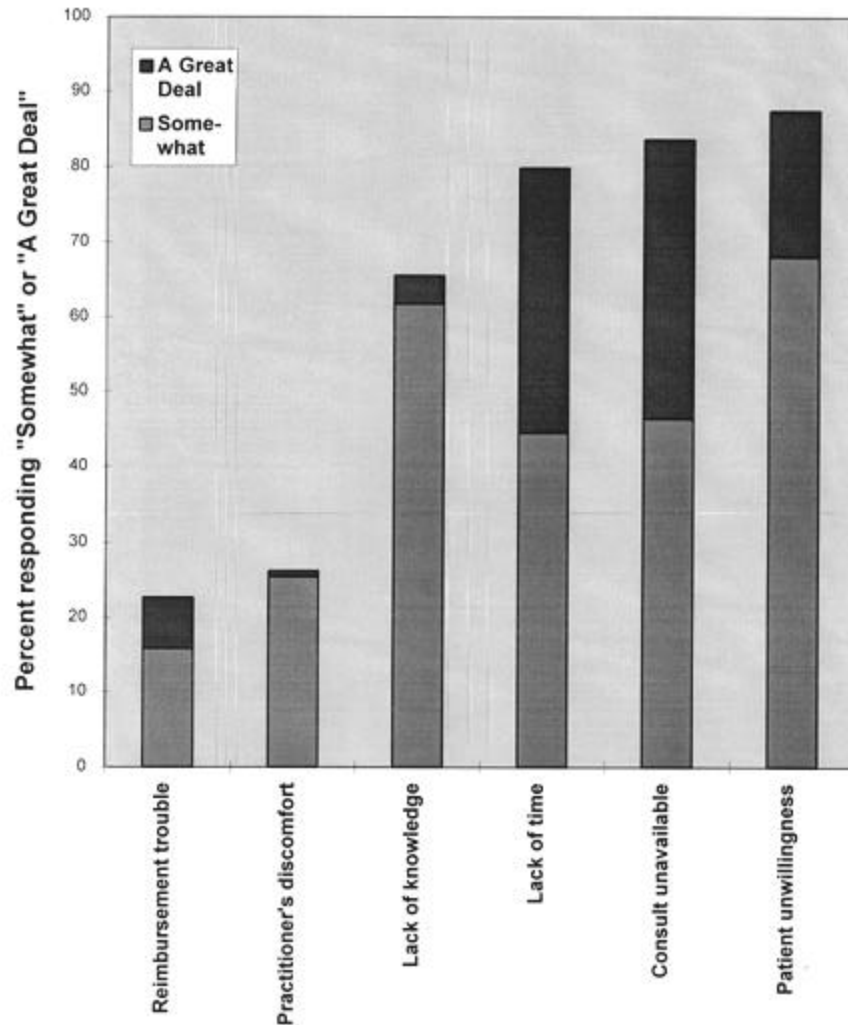
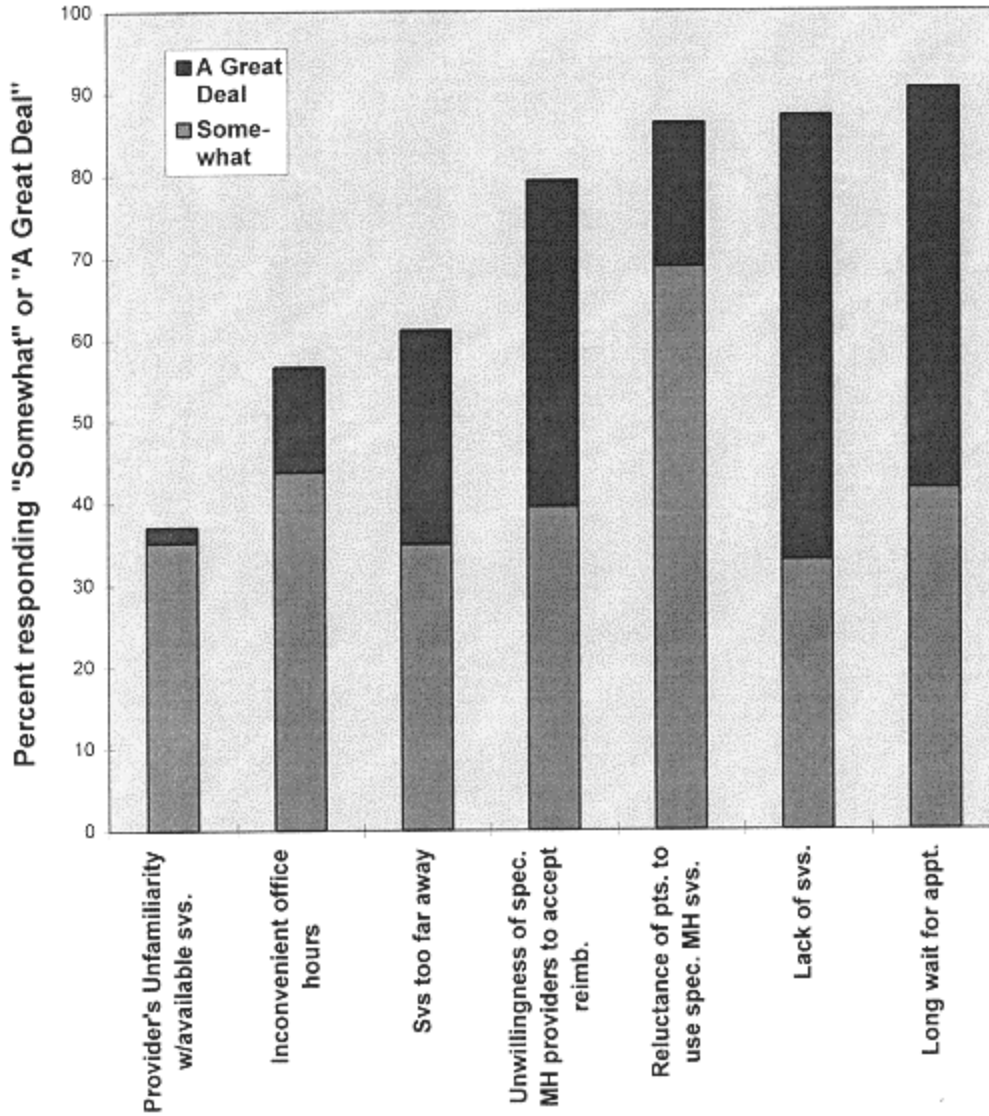
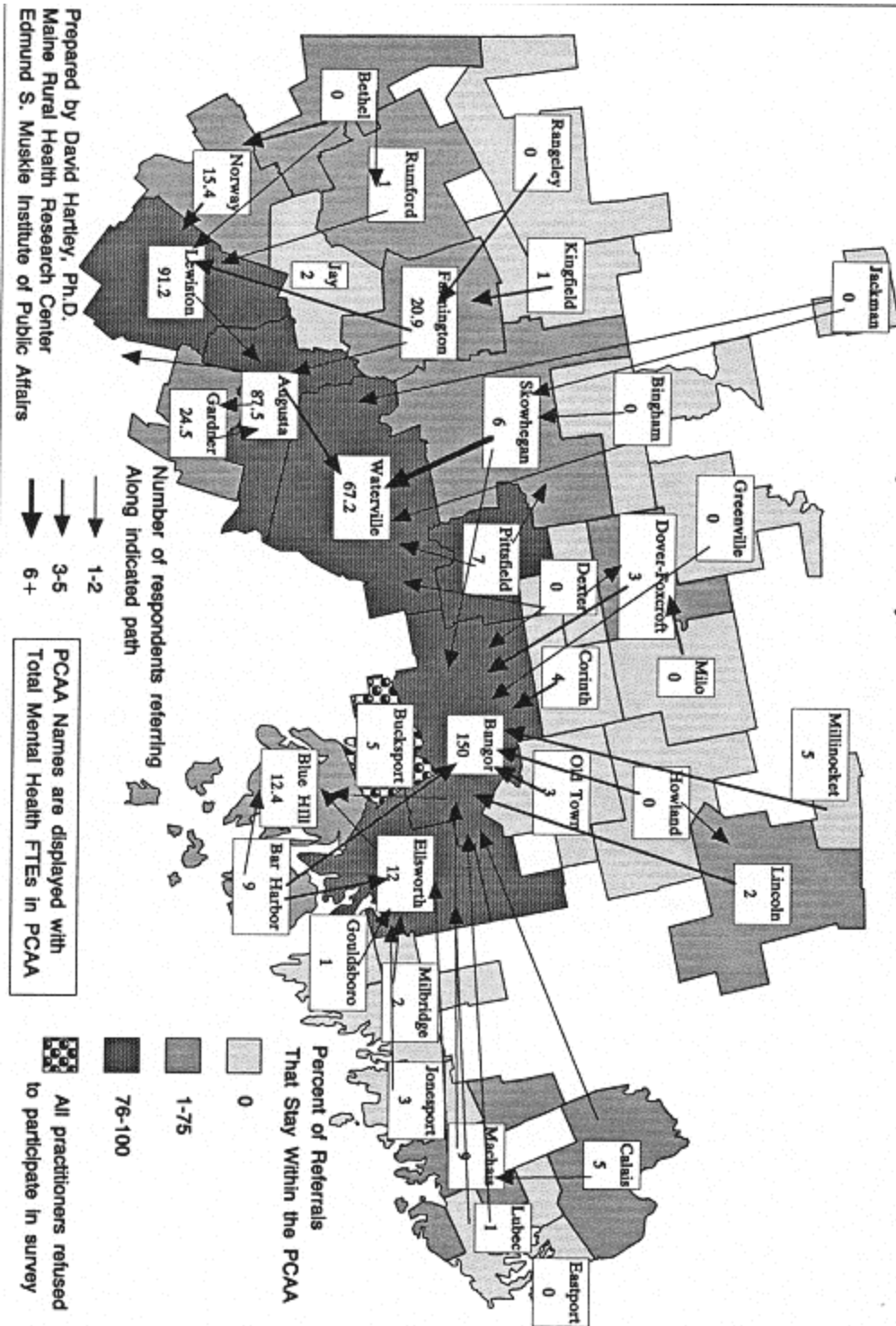


Figure 2

Factors that hinder primary care practitioners' ability to refer patients with depression



**Figure 3**  
**Referrals to Mental Health Providers**  
**By Primary Care Practitioners**



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