

Primary Care Satellite Clinics and Improved Access to General and Mental Health Services

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Objectives. To evaluate the relationship between the implementation of community-based primary care clinics and improved access to general health care and/or mental health care, in both the general population and among people with disabling mental illness.

Study Setting. The 69 new community-based primary care clinics in underserved areas, established by the Department of Veterans Affairs (VA) between the last quarter of FY 1995 and the second quarter of FY 1998, including the 21 new clinics with a specialty mental health care component.

Data Sources. VA inpatient and outpatient workload files, 1990 U.S. Census data, and VA Compensation and Pension files were used to determine the proportion of all veterans, and the proportion of disabled veterans, living in each U.S. county who used VA general health care services and VA mental health services before and after these clinics began operation.

Design. Analysis of covariance was used to compare changes, from late FY 1995 through early FY 1998, in access to VA services in counties in which new primary care clinics were located, in counties in which clinics that included specialized mental health components were located, and for comparison, in other U.S. counties, adjusting for potentially confounding factors.

Key Findings. Counties in which new clinics were located showed a significant increase from the FY 1995–FY 1998 study dates in the proportion of veterans who used general VA health care services. This increase was almost twice as large as that observed in comparison counties (4.2% vs. 2.5%: $F = 12.6$, $df = 1,3118$, $p = .0004$). However, the introduction of these clinics was not associated with a greater use of specialty VA mental health services in the general veteran population, or of either general health care services or mental health services among veterans who received VA compensation for psychiatric disorders. In contrast, in counties with new clinics that included a mental health component the proportion of veterans who used VA mental health services increased to almost three times the proportion in comparison counties (0.87% vs. 0.31%: $F = 8.3$, $df = 1,3091$, $p = .004$).

Conclusions. Community-based primary care clinics can improve access to general health care services, but a specialty mental health care component appears to be needed to improve access to mental health services.

Key Words. Access, mental health services, Department of Veterans Affairs

In an effort to improve both the efficiency and the continuity of health care, substantial efforts have been made in recent years to shift the emphasis of health care service delivery away from medical specialists and toward primary care providers (Cohen 1993; Greenfield, Nelson, and Zubkoff 1992). Concerns have been raised, however, about both the quality and the outcomes of treatment provided by nonspecialists (Jollis, DeLong, Peterson, et al. 1996; Goldman 1996), and particular concerns have been raised about the ability of primary care providers to deliver high-quality mental health care services (Wells et al. 1996).

An issue of potential concern that has yet to be addressed is the effect of de-specialization on access to services, particularly among people with mental illness—and especially among those with serious mental illness. Epidemiologic studies show that only 28.5 percent of Americans with identifiable mental illness seek services annually (Regier, Narrow, Rae, et al. 1993). In a recent study of a national sample of adults who (a) met diagnostic criteria for major depression, (b) expressed suicidal thoughts, and (c) also had a regular health care provider, only 11 percent were receiving antidepressant medication (Druss, Hoff, and Rosenheck 2000). The major reason for this undertreatment was that their providers had not informed these patients about their emotional problems. The stigma that unfortunately still appears to be associated with mental illness seems to inhibit patients from bringing up behavioral health problems with their general health care providers and thus from obtaining needed treatment.

Travel distance is also an important barrier to receiving health care services. Previous studies have found it to be the most important impediment to use of Department of Veterans Affairs (VA) health care services (National Center for Veteran Analysis and Statistics 1995) and to use of VA mental health services in particular (Rosenheck and Stolar 1998). This problem is especially important because VA is a national health care system with an obligation to provide services equitably for all U.S. veterans, wherever they

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live. VA traditionally has concentrated its services in large medical centers. As a result, many veterans live considerable distances away from the nearest VA facility. In 1994, U.S. veterans lived an average of 24 miles from the nearest VA clinic or hospital, almost six times as far as the four miles to the nearest non-VA hospital (Rosenheck and Dilella 1998). VA thus provides an especially illuminating example of the more general problem of impeded access to health services.

Between late FY 1995 and mid-FY 1998, in an effort to reduce the distance barrier, VA established 69 new Community-Based Outpatient Clinics (CBOCs) that focused on delivering primary care services through satellite clinics in underserved areas of the country. Twenty-one of these satellite clinics included a specialized mental health component. A conventional primary care model might suggest that primary care gatekeepers would identify people with mental illness and appropriately refer them to specialty mental health treatment and that, as a result, one would observe similarly improved access to services for both general medical care and specialty mental health care—for patients both with and without disabling mental illness. However, in view of the cited literature, we hypothesized that patients with general medical problems would gain improved access to health care services as a result of the establishment of such clinics, but that mental health patients would gain improved access only in areas served by clinics that included specialty mental health providers.

In this study we evaluate this hypothesis by comparing changes in population-based access to services in counties where a new CBOC was located with changes in service access in counties with no new CBOC. We also compare changes in access to various services in counties having a CBOC with a mental health care component and in other counties. In separate analyses we examine the relationship of CBOCs to improved access among veterans known to have significant mental illness or significant medical illness because they receive VA compensation payments for such illnesses. Through these analyses we seek to evaluate whether and under what conditions primary medical care clinics can improve access to general medical and mental health services in underserved areas.

METHODS

Community-Based VA Outpatient Clinics

Between August 1, 1995 and March 31, 1998, VA established Community-Based Outpatient Clinics in 69 separate locations across the country. Average

annual expenditure on these clinics was \$387,578 (s.d. = 223,418, range \$24,000–\$1,400,000). Specialty mental health services were included in 21 of these clinics, but additional details of their exact mental health staffing are not available.

Study Design

The design of this study is a pre-post nonequivalent comparison group design. The basic units of analysis are U.S. counties in the 50 states and the District of Columbia ($n = 3,156$). Because the CBOCs studied here were established from FY 1995 to FY 1998, the dependent variables of primary interest are changes from FY 1995 to FY 1998 in the proportion of veterans residing in each county who used (a) any VA health care services at any VA facility in the country and (b) specialized VA mental health services at any VA facility in the country. This population-based approach was necessary because a count of the number of patients served at the new clinics would not allow us to distinguish improved access to VA services attributable to the new clinic from a mere relocation of services provided to veterans who would have used VA services anyway. Not even a count of patients seen at the new clinics who had been previous nonusers of VA services would accurately reflect the impact of the new clinics, because some of these new patients might have chosen to use VA services even if the new clinics had not been established.

The county was chosen as the geographical unit of analysis because CBOCs are not assigned to specific catchment areas and the county is the smallest identifiable geographic unit. Given that distance is the main impediment to use of VA services, one would expect CBOCs to have their greatest effect in the proximate geographic area. There remains some risk that contiguous counties could also be affected and that this could bias data from comparison counties; however, since CBOCs are located in only 69 of more than 3,000 counties, this bias is likely to be minimal.

The general analytic approach was to compare the change in the percentage of veterans who accessed VA care in counties in which a CBOC was established with the change in the percentage of veterans who accessed VA care in counties in which no CBOC was introduced. If CBOCs increase the accessibility of VA services, we would expect a greater increase in population coverage (the percentage of the population who used any VA services) to occur in counties in which a CBOC was established. Because other factors—such as the size and sociodemographic characteristics of the veteran population in each county and the availability of non-VA mental health services—may alter

the impact of CBOCs, adjustment is made for these factors using analysis of covariance.

If primary care CBOCs provide an effective gateway to general health services, we would expect a significantly greater proportion of the population to find access to general VA services in counties with new CBOCs. We would expect to see increased access to mental health services only where a mental health component was included in the CBOC.

Target Population and Subgroups

Although at the time of this study, veterans did not formally register for participation in the VA health care system and, in theory, any veteran could use VA services, important differences in priority for VA service use existed among veteran subgroups. Veterans who received compensation for service-connected illnesses received highest-priority access to VA health services, while veterans with low incomes (i.e., below about \$20,000 per year, with adjustment for dependents) were eligible for services to the extent that treatment resources were available. Veterans whose need for health care was not service-connected and who did not meet low-income criteria had the lowest priority for services. In a previous study we showed that county-based income distribution among veterans, as well as other sociodemographic characteristics (age, racial composition, distance from VA) also had significant effects on the use of VA services (Rosenheck and Stolar 1998). For these reasons we include data on population characteristics as covariates in all analyses, and we conduct separate analyses for veterans (a) in the general population and (b) who receive VA compensation.

Sources of Data and Measures

Initiation of CBOCs. Data on the location, date of initiation, funding, and presence of mental health components for all VA CBOCs that began operation between late FY 1995 and mid-FY 1998 were obtained from the VISN Support Service Center of the Veterans Health Administration.

Access to Services. Data on access to VA general health and mental health services were derived from two computerized VA workload files: (1) the Patient Treatment File, a discharge abstract file documenting basic information on all VA inpatient episodes, and (2) the Outpatient Care File, which records each outpatient clinic visit. These files also include data that indicate the county of residence of each service user. Social security numbers were used to determine the number of unique (unduplicated) individuals who

used any VA health care service as well as the number who used inpatient or outpatient specialty mental health services in each U.S. county during FY 1995 and FY 1997. Although precise validation data on these files are not available, considerable care is taken by VA administrators to assure their accuracy because they are used to generate workload statistics that influence facility funding levels. Inaccuracies are far more likely to influence data on the number of specific services provided rather than on the number of individuals who are receiving any services.

Data on the number of veterans residing in each U.S. county were obtained from the 1990 Decennial Census. Veterans residing in each county who receive VA compensation for psychotic and nonpsychotic illnesses were identified through VA compensation payment files downloaded at the end of each fiscal year. Through use of a unique identifier these compensation payment files were matched with the workload files to determine the precise proportion of veterans with service-connected illness who resided in each county and who used VA services. Thus, while the size of the veteran population could have changed to varying degrees in different counties between 1990 and the time of the study, this potential problem would not affect the data on service-connected veterans.

Change in Population Coverage. The principal dependent variable was the change in population coverage (the proportion of veterans in various population groups who received VA services). This was measured by subtracting the proportion of veterans in the population who received VA services in FY 1995 from the proportion who received services in FY 1998.

Characteristics of the Veteran Population. As noted earlier, no formal registration takes place for VA care. Further, data on personal characteristics of veterans in the general population are not available at the level of the individual person, and only limited identifying information is available from the compensation files on those receiving VA payments. Data on characteristics of the population of veterans who reside in each county, however, were obtained from summary files from the 1990 Decennial Census. Information available for each county includes population age (percentage of veterans over age 65), race (percentage of African American veterans), ethnicity (percentage of Hispanic veterans), and income (percentage of veterans with family income of less than \$10,000 per year).

Census data on the number of veterans living in each zip code area were used to construct variables, at the county level, that reflect the average distance between the residence of veterans in each county and both (a) the nearest VA outpatient clinic, and (b) the nearest non-VA hospital. Data on the

location of non-VA hospitals were obtained from annual survey data of the American Hospital Association.

The supply of competing mental health services is also likely to influence VA service use (Rosenheck and Stolar 1998). Data on the per capita funding of mental health services by the State Mental Health Agency (Lutterman, Harris, O'Brien, et al. 1993.) were used to estimate the availability of such services, because poor and disabled patients such as those who use VA services are most likely to use services funded by these agencies.

Analysis Plan

Analysis of covariance was used to compare the statistical significance of the difference in the proportion of veterans using VA health care services, from FY 1995 and FY 1998, in counties in which a new CBOC was opened; in counties in which a CBOC with a mental health component was opened; and in U.S. counties in which no CBOC was opened. Two classification variables, one representing the implementation of any CBOC and the second representing the implementation of a CBOC with a mental health component, were included in each model. Covariates included in the models are the potentially confounding factors described earlier. Because counties with low levels of VA service use had greater potential for increased access, the 1995 level of utilization was also included as a covariate.

Interaction analyses were also conducted to identify specific county population characteristics that were associated with significantly greater or lesser effects of CBOC implementation. In these analyses two dichotomous variables were included as main effects and in interaction with measures of the population characteristics of the county. One measure represented counties in which any new CBOC was opened, and another represented counties in which the new CBOC included a mental health component.

RESULTS

Population Characteristics and Service Use

Table 1 presents the mean values and standard deviations of measures for the 3,156 U.S. counties. Means presented in this table are unweighted for the population of veterans living in each county and thus do not reflect national rates. Data on service use show that in FY 1995, on average, 11.3 percent of veterans living in each county used VA health services; 42 percent of all service-connected veterans used VA services; 9.3 percent used VA medical

or surgical services only; and 59 percent of veterans service-connected for mental illness used any VA medical or psychiatric services. On average, 2 percent of the veterans residing in each county used VA specialty mental health services and 33 percent of those service-connected for a psychiatric disorder used such services.

From FY 1995 through early FY 1998, the average rates of service use across counties increased by about 10–20 percent over their FY 1995 level in virtually all service use categories—that is, for both any VA use and for specialized mental health service use, and for both veterans in the general population and veterans who were service-connected for psychiatric and nonpsychiatric disorders (Table 1).

Table 1: Population and Service System Characteristics (County Means and Standard Deviations)

	<i>Mean</i>	<i>s.d.</i>
<i>Sociodemographic characteristics</i>		
Age (> 65)	28.1%	6.4%
Percent African American	5.5%	8.9%
Percent Hispanic	1.8%	4.7%
Percent annual income <\$10,000	12.1%	5.6%
<i>Factors affecting access to VA health care services</i>		
Distance to VA OP clinic (miles)	53.9	51.7
Distance to non-VA hospital (miles)	8.6	18.6
State mental health agency per capita expenditures, 1990	\$43.94	19.42
<i>Any VA service use (1995)</i>		
All veterans	11.3%	7.0%
Service-connected for any disorder	42.2%	12.1%
Service-connected for non-mental health disorder	39.2%	12.0%
Service-connected for a psychiatric disorder	59.3%	16.7%
<i>VA medical-surgical use (1995)</i>	9.3%	6.0%
<i>VA mental health service use (1995)</i>		
All veterans	2.0%	1.5%
Service-connected for a psychiatric disorder	33.0%	12.1%
<i>Change in VA service use (1995–1998)</i>		
All veterans	2.5%	3.3%
Service-connected for any disorder	7.7%	7.3%
Service-connected for non-mental health disorder	7.5%	7.6%
Service-connected for a mental illness	6.3%	13.7%
<i>Change in VA medical-surgical use (1995–1998)</i>	2.1%	3.1%
<i>Change in VA mental health service use (1995–1998)</i>		
All veterans	0.36%	0.76%
Service-connected for a psychiatric disorder	4.8%	9.7%

CBOCs and Increased Access to Services

Counties in which new CBOCs were established showed an increase in the proportion of veterans who used general VA health care services that was almost twice as large as that observed in other counties (4.2% vs. 2.5%: $F = 12.6$, $df = 1,3118$, $p = .0004$) (Table 2, upper panel). Significant increases in access to VA services were also noted for veterans who were service-connected for any disorder and who were service-connected for a non-mental health disorder, but not among those who were service-connected for a mental health disorder. Although we found a significantly greater increase in use of medical-surgical (i.e., non-mental health) services in counties that established a CBOC as compared to others (3.6% vs. 1.8%: $F = 15.72$, $df = 1,3091$, $p < .0001$), no greater increase in use of mental health services was found, either among the general population of veterans or, more specifically, among veterans who were service-connected for a psychiatric disorder.

Counties in which CBOCs included a specialty mental health component, however, showed a significantly greater increase in the proportion of veterans who used VA mental health services that was almost three times as large as that observed in comparison counties (0.87% vs. 0.31%: $F = 8.3$, $df = 1,3091$, $p = .004$) (Table 2, lower panel). There were no other statistically significant differences in measures of increased access between counties in which CBOCs with a mental health component were established and other counties, perhaps because only 21 counties had this component and thus the statistical power to detect significant trends was limited. However, it is notable that among veterans who were service-connected for mental illness, the use of mental health services increased at almost twice the rate in other counties (7.7% vs. 3.9%: $F = 2.5$, $df = 1,2797$; $p = .11$).

Interaction with Characteristics of the County Veteran Population

Analysis of the interaction of CBOC implementation and various characteristics of the veteran population across counties showed that CBOCs had their greatest effect on access to medical-surgical (i.e., non-mental health) services in counties with larger proportions of veterans over 65 years of age ($F = 4.69$, $df = 1,3085$, $p < .03$) and in counties with larger proportions of Hispanic veterans ($F = 5.34$, $df = 1,3085$, $p < .02$). No significant interactions were found between the establishment of a CBOC with a mental health component and any characteristics of the county veteran population.

Table 2: Change in Population Coverage FY 1995-1998 by Counties With and Without New Community-Based Outpatient Clinics (CBOCs) Established in FY 1996-1998 and by Counties With and Without Mental Health-staffed CBOCs

	New CBOC N = 69		No New CBOC N = 3,067		F	df	P
	Mean	s.d.	Mean	s.d.			
<i>Change in VA service use (1995-1997)</i>							
All veterans	4.2%	0.05	2.5%	0.03	12.6	1,3118	.0004
Service-connected for any disorder	9.6%	0.05%	7.6%	0.07	4.08	1,3114	.04
Service-connected for nonpsychiatric disorder	9.4%	0.05	7.3%	0.07	3.91	1,3112	.05
Service-connected for a psychiatric disorder	9.0%	0.14	6.4%	0.14	0.11	1,3057	.46
<i>Change in VA medical-surgical use (1995-1997)</i>	3.6%	0.02	1.8%	0.03	15.72	1,3091	.0001
<i>Change in VA mental health service use (1995-1997)</i>							
All veterans	0.55%	0.01	0.64%	0.01	0.67	1,3091	.41
Service-connected for a psychiatric disorder	5.0%	0.06	6.6%	0.10	1.59	1,2797	.21
<i>New MH CBOC* N = 21</i>							
<i>No New MH CBOC N = 3,109</i>							
	Mean	s.d.	Mean	s.d.	F	df	P
<i>Change in VA service use (1995-1997)</i>							
All veterans	3.4%	0.03	3.4%	0.03	0.00	1,3118	.97
Service-connected for any disorder	8.4%	0.05	8.8%	0.07	0.03	1,3114	.85
Service-connected for nonpsychiatric disorder	8.1%	0.05	8.6%	0.07	0.06	1,3112	.81
Service-connected for a psychiatric disorder	8.6%	0.06	6.1%	0.14	0.11	1,3057	.73
<i>Change in VA medical-surgical use (1995-1997)</i>	2.5%	0.03	3.0%	0.03	0.43	1,3091	.51
<i>Change in VA mental health service use (1995-1997)</i>							
All veterans	0.87%	0.01	0.31%	0.01	8.3	1,3091	.004
Service-connected for a psychiatric disorder	7.7%	0.05	3.9%	0.10	2.53	1,2797	.11

Note: Covariates in Analysis of Covariance include county-level measures of age, race, income, total veterans population, average distance of residence to the nearest VA clinic and non-VA hospital, per capita State Mental Health Agency expenditures, and level of VA service use in FY 1995. *CBOC with a mental health specialty component.

DISCUSSION

Primary Care Clinics and Access to General Health Care Services

This study shows that the establishment of community-based primary care satellite clinics is associated with improved access to health care services. The implementation of new CBOCs in the VA system as associated with substantial increases in access to VA services for the general veteran population, for the more seriously ill subgroup with nonpsychiatric service-connected disabilities, and for those who use VA medical or surgical services only.

The association of CBOCs with increased access to VA care was significantly greater in counties with higher proportions of older veterans and in counties with higher proportions of Hispanic veterans. The stronger effect of CBOCs in counties with a greater proportion of older veterans most likely reflects the greater numbers of veterans who are eligible and in need of VA care in those counties. Residents of those counties may thus be especially responsive to the availability of low-cost care from VA. The increased impact of CBOCs in counties with high Hispanic populations may reflect the reluctant attitude, especially well documented among Mexican Americans, toward formal health care services, as described in other studies (Schur, Bernstein, and Berk 1987; Hough, Landsverk, Karno, et al. 1987).

Access to Mental Health Services

In contrast to the positive findings for access to general health care services, we found no significant association between implementing a CBOC program and increased access to mental health care except where CBOCs had a specialty mental health component.

These data suggest that patients with psychiatric disorders are either reluctant to discuss their problems with primary care providers or are hesitant to turn to general CBOCs for mental health care because they do not expect primary care providers either to understand their problems or to have the technical skills to address them. Studies cited previously show generally low levels of mental health service use among people with clear evidence of mental illness, even when they have a regular health care provider (Druss and Rosenheck 2000), and this study confirms their impressions.

Limitations

Several methodological limitations must also be acknowledged. First, the sample of CBOCs was small, involving only 69 counties with new CBOCs,

and only 21 of the 69 with mental health components. This small sample size may have diminished our statistical power to detect the impact of CBOCs on access to mental health care at CBOCs without mental health clinics. It does not seem to have impaired our ability, however, to detect associations between CBOC implementation and access to non-mental health services or on access to mental health services at clinics with mental health clinical staff.

Second, the three-year time frame encompassed by this study was relatively brief; additional associations between CBOC implementation and mental health service use may be observed over a more extended period of time. In addition, if CBOCs had been selectively placed in counties where the use of VA services was increasing, the direction of causality would be opposite to the one that we have postulated, with increased VA use driving the location of CBOCs. Even though we cannot rule out this possibility, the explicit goal of the CBOC initiative was to target veterans living in underserved areas and, from a managerial perspective, it would have been inefficient to invest additional off-site resources in areas where service use was already expanding.

Third, since CBOCs were not implemented in randomly assigned counties, it is possible that our findings reflect differences among counties that are not related to the establishment of CBOCs and that are not addressed by the covariates included in our multiple-regression analyses. An issue of potential concern here is whether CBOCs were selectively implemented in counties with growing populations. Although such population increases could affect our data on access to VA services in the general population, the population would have had to double to give a false impression that rates of access to VA services doubled. In any event, such selective implementation of CBOCs would not have affected our analysis of access to services among service-connected veterans because that sample was specifically identified at the end of each year. The similarity in our results for service-connected and non-service-connected veterans suggests that differential population growth is not likely to account for our results. The relationship between CBOC implementation and improved access to services is generally weaker among service-connected veterans than among veterans in the general population, most likely because service-connected veterans have priority access to VA services and thus experience lower levels of unmet demand.

Fourth, because data on veteran characteristics are available only at the county level, our evaluation of types of veterans who are most likely to be affected by the opening of a CBOC must be interpreted cautiously. Findings at the level of groups or populations may not hold true for individuals within those populations (the ecological fallacy).

Finally, it is possible that primary care clinicians at CBOCs without mental health components provided comprehensive mental health care themselves and met their patients' needs without referring them to specialists. The data available for this study do not document delivery of mental health services in primary care clinics. However, studies documenting the infrequent treatment of mental illness in general medical clinics (Druss, Hoff, and Rosenheck 2000), and specifically in VA primary care clinics (Druss and Rosenheck 2000), suggests that this is not a likely explanation.

Policy Implications

The data presented here suggest that the unspecialized primary care gatekeeper model may have limited effectiveness in addressing the specialized service needs of people with mental illness, and perhaps of other populations with special needs as well. Specialized mental health service components may need to be included if satellite community clinics are to improve access to mental health services.

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