Why Do Some Health Centers Provide More Enabling Services Than Others?

Rebecca Wells, PhD, MHSA
Rajeshwari S. Punekar, MPH
Joseph Vasey, PhD

Abstract: Enabling services (such as outreach, transportation, case management, and discharge planning) play a critical role in improving care for vulnerable populations. However, these services are generally not covered by third party payers, making them a challenge for safety net providers that are themselves often financially strained. The study reported here identified organizational and patient population characteristics associated with enabling services provided by community health centers funded by the Health Resources and Services Administration (HRSA). Lagged regressions on 2003–2004 data from HRSA's Uniform Data System (n=841) indicated that health centers with more managed care contracts and larger staffs provided both broader scopes of enabling services and higher volumes of these services. Grant revenue was negatively associated with the volume of enabling services; however, net revenue was positively associated with service volume. There were several positive associations between indicators of patient need and the scope and volume of enabling services.

Key words: Enabling services, outreach, access, community health centers.

Services that facilitate access to medical care (*enabling services*)[1] are core mechanisms through which federally funded community health centers in the U.S. care for the underserved.[2,3] The majority of health centers provide outreach and translation services, reducing informational barriers to care;[4] over half provide transportation services, and 60% make home visits, addressing travel difficulties. Most health centers also provide case management,[5] which is vital for people with limited knowledge of health care systems. Enabling services are particularly important for the populations served by federally qualified community health centers, which tends to be sicker than the general U.S. population[6] and to be faced with more barriers to access.[4]

Evidence from a range of settings indicates that enabling services improve health care access and outcomes. Analyses have repeatedly shown that community health center patients have better access to primary and preventive care than do comparable individuals served in other settings, a pattern authors have attributed largely to enabling

***REBECCA WELLS** is an Assistant Professor at the University of North Carolina at Chapel Hill, where she can be reached at 1104F McGavran-Greenberg Hall, Campus Box 7411, Chapel Hill, NC 27599-7411; (919) 966-7384; rswells@email.unc.edu. **RAJESHWARI PUNEKAR** is a doctoral candidate in the Department of Health Policy and Administration at Pennsylvania State University, where **JOSEPH VASEY** is a Research Associate.*

services.[7,8] Research on a range of other vulnerable patient populations supports this view. For instance, case management and transportation services have been associated with greater service utilization[9] and treatment retention[10] among substance abuse treatment clients, and parenting education has been linked with earlier initiation of infant well care and greater likelihood of timely immunizations for low-income children.[11]

The value of enabling services does not ensure their provision, however. Third party payers generally reimburse health care providers insufficiently, if at all, for outreach and coordination of care.[1] Although federal grants are intended in part to fund enabling services, they have never fully met the need. Health centers also often absorb the costs of state efforts to contain public spending, such as Medicaid managed care.[12] Many have thin or even negative financial margins,[5,13] and thus few resources for under-compensated services. Despite a major federal health center expansion initiative,[14] continued cost control efforts such as state restrictions on Medicaid eligibility[15] portend ongoing difficulty for community health centers.

Likely because of the attendant financial challenges, there is significant variation in community health center provision of enabling services. In a national survey of health center patients, 14% indicated that transportation problems had kept them from getting needed medical care in the previous six months,[16] and in a survey of Latino parents at an inner city clinic, 21% cited transportation as an obstacle to care.[17] Forty-five percent of federally funded health centers did not themselves provide transportation in 2006, and two-thirds of this group (i.e., 30% of all centers) also did not make paid referrals for such services.[5] Six percent of patients said they had missed needed medical care due to a lack of child care,[16] yet only 10% of health centers provided this service on site.[5]

What factors affect the provision of enabling services by community health centers? To address this question, the current investigation examined associations between organizational and patient population characteristics and both the scope (number of types) and volume (number of encounters) of enabling services provided by community health centers funded by the Health Resources and Services Administration (HRSA). This was the first study to examine in detail factors associated with this vital element of community health center services.

To identify factors that might affect provision of enabling services, we considered potential sources of both supply and demand. First, we examined the role of health center financial factors in service provision. Next, we considered health center staffing as another source of capacity for service provision. Then, we turned to the role of center location in areas of varying urbanicity, a factor potentially affecting both supply and demand for enabling services. Finally, we considered a range of patient population attributes indicative of need for enabling services. Thus, we incorporated both health center and patient characteristics that might affect the scope and volume of enabling services that health centers provide.[2,18]

Examining associations between health center financial and staffing attributes and enabling services may reveal ways health center leadership and policy makers could strengthen centers' capacities to provide enabling services. For instance, both HRSA's Bureau of Primary Health Care (BPHC) and a range of private foundations now invest substantial resources in community health centers. A positive association between grant revenue and enabling services would indicate that current grant funds are already

supporting these services. Conversely, the lack of such an association might indicate that funders who want to increase access to health centers need to focus future grants specifically on these services. Health center executives and trustees might enter more managed care contracts if these agreements did not appear to undermine enabling services. If high staff caseload appeared to have negative consequences for enabling services, this could interest both internal and external stakeholders who might otherwise view higher caseload purely from an efficiency perspective.

Both internal and external health center stakeholders may also be interested in how well enabling service provision correlates with different indicators of patient need. If aggregated analyses reveal discrepancies between need and level of enabling services, board executives, trustees, and external funders might examine the correspondences at their own facilities. These could prompt interventions, such as grants focused on improving enabling services for specific populations.

Potential predictors of enabling service provision. *Health center finances*. One distinctive attribute of federally qualified health centers is the very high proportion of revenue derived from grants. Funders such as the federal government and private foundations are interested in improving access for underserved populations. Thus, we expected that health centers with more grant funding would provide more enabling services.

More generally, community health centers were expected to provide more enabling services when they had more positive overall financial margins and thus more discretion about service provision[19] or when doing so fit payer norms. Although McAlearney[13] found no association between Community Health Centers' (CHC) prior financial performance and likelihood of adding or dropping enabling services, more recent data revealed that health centers in substantially higher net revenue categories provided more preventive services than did otherwise comparable centers.[20] Similarly, a national study of substance abuse treatment centers found a positive association between financial margin and service extensiveness.[21] Finally, the structure of insurance contracts may matter. For instance, we hypothesized that managed care might support more enabling services because of this insurance form's emphasis on prevention and continuity of treatment.[22,23]

Staffing. In general, larger health care organizations have more capacity to provide services.[24–26] Thus, we expected that health centers with more staff would provide a broader scope and higher volume of enabling services. Conversely, we anticipated that higher patient caseloads would detract from enabling services by forcing staff to focus more exclusively on core clinical services.

Location. Although transportation is a major barrier to access in all areas, it looms larger in rural and exurban areas, which often lack public transportation and which, by definition, encompass greater distances.[27] With lower proportions of college educated people,[28] rural populations also tend to have greater need for education and outreach services. Thus, we expected that rural and exurban health centers would offer more enabling services than would urban health centers.

Patient population characteristics. Ideally, patient need drives provision of enabling services. In previous research on community health centers, McAlearney found that those with the largest increases in numbers of uninsured patients tended to increase

provision of enabling services.[13] There is also evidence from research on other vulnerable populations that service provision will correspond to need.[21,29] Thus, our final prediction was that health centers with more patient need for enabling services would provide more such services.

Methods

Data. We defined our sample as all fully operational U.S. community health centers that received funding in both 2003, the year from which the predictors were drawn, and 2004, the year from which measures of enabling services were derived. The primary source of data for this research study was HRSA's Uniform Data System (UDS) records from 2003 and 2004. After 2004, HRSA stopped releasing a range of information on health center attributes and services, including enabling encounters; thus, these are the latest available data for these analyses. The UDS data are collected annually from reports filed by community health centers funded by HRSA's Bureau of Primary Health Care (BPHC).[5]

Measures. The unit of analysis was a federally funded community health center. As shown in Box 1, dependent variables were the *scope* and *volume* of enabling services available in 2004. We constructed the measure of the *scope* of enabling services as the count of the number of types of services defined by HRSA as enabling[30] provided in 2004. For instance, a health center that provided (1) outreach, (2) eligibility assistance, (3) transportation, (4) home visiting, (5) translation services, (6) parenting education, and (7) health education would have a value for enabling scope of seven out of the 15 possible services. We measured the *volume* of enabling services as the total number of clinical encounters for enabling services reported by each health center for the year 2004. Health centers were allowed to code medical encounters as enabling encounters as well if both types of services were provided.

Predictors of the scope and volume of enabling services were organizational characteristics and patient population characteristics in 2003 (Box 1). For the hypothesis that grants would be positively associated with enabling services, we constructed grant revenue as the total grant funding from all sources in that year divided by the number of encounters reported. For the hypothesis that health center financial margin would be positively associated with enabling services, we calculated net revenue as total revenue minus total expenses,[31] again divided by the number of encounters. For the hypothesis that managed care would be positively associated with enabling services, we used each health center's report of its number of managed care contracts to indicate involvement in managed care. For the hypothesis that health centers with larger staffs would provide more enabling services, total number of full-time equivalent staff members indicated staff size. For the hypothesis that staff caseload would be negatively associated with enabling services, we divided the total number of unduplicated patients by the total number of full-time equivalent staff members to measure caseload.

For the hypothesis that rural and exurban centers would provide more enabling services, we constructed three dummy variables from the U.S. Department of Agriculture's Rural-Urban Continuum to indicate the degree of rurality of each health center's location. The original ordinal variable categorizes counties along a spectrum from

Box 1.
HYPOTHESES, MEASURES, AND CONSTRUCTS

	Construct	Measure
	Outcomes (2004)	
	Scope of Enabling Services	Count of the following types of services the health center provided (each "yes" counted as 1): outreach, out stationed eligibility workers, eligibility assistance, transportation, home visiting, case management, translation services, child care during visits, parenting education, special education program, environmental health risk reduction, health education, discharge planning, nursing home/assisted living placement, other
	Volume of Enabling Services	Annual number of encounters for enabling services
Hypothesis	**Health Center Attributes (2003)**	
Grant Funding Will Be Positively Associated With Scope and Volume of Enabling Services	*Grant Revenues Per Encounter*	Total grant revenue from all sources in 2003 dollars, including HRSA and other federal, as well as any from private foundations/ total number of encounters
Health Center Financial Margin Will Be Positively Associated With Scope and Volume of Enabling Services	*Net Revenue Per Encounter*	Total net revenue in 2003 dollars/ total number of encounters
Managed care Contracts Will Be Positively Associated With Scope and Volume of Enabling Services	*Managed care Contracts*	Number of managed care contracts

(Continued on p. 512)

Box 1. *(continued)*

	Construct	Measure
The Size of Health Center Staffs Will Be Positively Associated With Scope and Volume of Enabling Services	*FTEs*	Number of full time equivalent staff (clinical and administrative). Log-transformed in model predicting scope of enabling services, based on curvilinear association between FTEs and scope in data; this was unnecessary in model of volume of enabling services because the outcome in that model was already log-transformed
Health Center Staff Caseload Will Be Negatively Associated With Scope and Volume of Enabling Services	*Caseload*	Number of patients (unduplicated patients, or "users") per FTE full time equivalent staff member during the year
Rural and Exurban Locations Will Be Positively Associated With Scope and Volume of Enabling Services	*Geographic Location (Area Resource File 1995 Rural-Urban Continuum Codes)*	1 if rural, i.e., = 8 or 9 in the Beale Urban-Rural Continuum; 0 otherwise
		1 if exurban, i.e., = 4, 5, 6, or 7 in the Beale Urban-Rural Continuum; 0 otherwise

(Continued on p. 513)

completely rural to central metropolitan according to population density and proximity to metropolitan areas.[32] We created a dummy variable (*exurban*) for all counties classified in the Rural-Urban Continuum as urban but not metropolitan. A separate dummy variable (*rural*) was constructed for observations classified as completely rural. The referent category was *urban*, that is, all counties classified as metropolitan. This information came from the Area Resource File, which contains county level information from a variety of sources.[33]

Finally, to test the hypothesis that patient need would be positively associated with enabling service provision, we followed HRSA standards to calculate measures of patient population composition. Patient needs were represented by each center's patient composition in terms of percentages female, 65 or over, non-White, needing translation services, migrant workers, homeless, and HIV-positive. Patients' ability to pay was measured through the percentage of patients uninsured and through the percentage privately insured.

Box 1. *(continued)*

	Construct	Measure
	Patient Characteristics (2003)	
The Proportion of Health Centers' Patients With Greater Need for Enabling Services Will Be Positively Associated With Scope and Volume of These Services (%)	*Female*	Number of female patients/total number of patients
	65 and Over	Number of patients age 65 or older/total number of patients
	Non-White	(# Asian/ Pacific Islanders + African Americans + Hispanics + American Indian/Alaskans)/ total number of patients
	Needing Translation	Number of patients needing translation/total number of patients
	Migrant Workers	Number of patients estimated to be migrant workers/total number of patients
	Homeless	Number of homeless patients/ total number of patients
	HIV Positive	Number of patients who are HIV positive/total number of patients
	Health Insurance: uninsured	Number of uninsured patients/ total number of patients
	Private Insurance (indicating less need)	Number of patients with private insurance/total number of patients

HRSA = Health Resources and Services Administration
FTE = Full-time Equivalent Staff

To reduce erroneous outliers, based on examination of the data in consultation with an expert in community health center finance and operations, total net revenue per encounter was restricted to the range $130 to −$130, the number of managed care contracts was set not to exceed 78, and the number of patients per full-time equivalent staff member was set not to exceed 340.

Analysis. Bivariate correlations were used to identify potential co-linearity. Variables with any correlations above 0.40 in absolute value were further tested through calculation of tolerance.[34]

One potential threat to the accuracy of the regression coefficient estimates was that patient population attributes might have been affected by health centers' prior enabling services. For instance, health centers with a higher percentage of patients needing translation services might have attracted some of those patients by having previously offered these services. This would have created endogeneity, a form of omitted variable bias in which variables in a model are caused by other variables in the model. Endogeneity generally results in biased regression estimates because relevant information has been omitted.[35] To test for this possibility, we regressed 2004 patient attributes on 2003–2004 change in enabling scope and volume, respectively, controlling for the 2003 levels of each enabling measure in its respective regression.

A one-year lagged ordinary least squares multiple regression model was run for each outcome, with 2003 measures of health center and patient population attributes predicting 2004 scope and volume of enabling services. This lag allowed for health centers to adapt enabling service provision to capacity levels and patient needs. For instance, we expected a center's funding level to affect the scope and volume of enabling services over the subsequent year (as, for instance, more or fewer parenting classes were provided) rather than immediately. Analyses were run in SAS software (Version 9.1.3 of the SAS System for Windows, Copyright © 2002–2003, SAS Institute Inc., Cary, NC, USA).

Results

There were 890 health centers in the 2003 UDS. Eight of those centers were no longer funded in 2004, bringing the sample available for the lagged analysis to 882. Four centers were eliminated because they reported less than one full-time equivalent staff person or no Bureau funding; another 37 were eliminated because they reported fewer than 5,000 encounters during 2003, again indicating that they were not fully operational, or had just opened at the very end of the reporting year. This brought the final sample size to 841. Fewer than 5% of observations (31 total) were affected by the restrictions of variable ranges outlined above for net revenue, the number of managed care contracts, and the number of patients per staff member; all of these observations were retained in the final analyses.

The absolute values of several bivariate correlations between predictors exceeded 0.40. The proportion of patients who were female was strongly negatively correlated with the proportion who were homeless ($r=-0.63$). The proportion of patients with private insurance was highly correlated with three other covariates: the proportion of patients who were uninsured ($r=-0.59$), the proportion who were elderly ($r=0.54$), and the proportion who were non-White ($r=-0.58$). However, no tolerance statistics exceeded 0.34, indicating that multicolinearity was not a problem.

All but one coefficient for the associations between 2003–2004 change in enabling scope and volume and patient population characteristics were nonsignificant (proportion of patients female, regressed on prior change in the volume of enabling services, $p<.05$). This indicated that endogeneity generally was not present.

The original measure of the volume of enabling services was highly skewed, resulting in non-normally distributed model residuals. The natural log of the number of enabling encounters (log(number of enabling encounters)) resulted in a much less

skewed distribution (from 5.2 to −0.66) and approximately normally distributed model residuals. Thus, the log-transformed measure of enabling volume was retained for the final ordinary least squares regression model predicting this outcome.

Descriptive statistics. Descriptive statistics are presented in Table 1. Out of a possible total of 15 types of enabling services, the median number in 2004 was nine (range 0–14). The median number of enabling encounters in that year was 1,439. The median grant revenue per encounter was $52.15, and median net revenue per encounter was 30 cents. The median number of managed care contracts was two. The median number of full-time equivalent staff members was 62.23 (health centers tend to operate at several sites). The median number of unduplicated patients per staff member over the year was 170.93. Fewer than one in ten health centers were rural (8.4%); 25.6% were exurban, and the majority (66.0%) were urban.

The median percentage of patients who were female was 59%. The median percentage elderly was 5.94%. The median percentage non-White was 64.68%. The median

Table 1.

DESCRIPTIVE STATISTICS (N=841)

Variables	Median/%	Range	Range between 25th and 75th percentiles
Outcomes (2004)			
Scope of Enabling Services (number of types)	9	0–14	3
Volume of Enabling Encounters	1,439	0–108,824	5,166
Health center attributes (2003)			
Grant Revenue Per Encounter in ($)	52.15	3.49–478.71	41.70
Net Revenue Per Encounter ($)	0.30	−130.00–83.74	12.81
Number of Managed Care Contracts	2	0–78	5
Number of Full-time Equivalent Staff	62.23	4.13–979.50	87.4
Caseload	170.93	25.45–340.00	76.54
Rural	8.4%		
Exurban	25.6%		
Urban	66.0%		
Patient population characteristics (2003)			
Female	59.00%	12.56–80.60	6.67
65 or older	5.94%	0–38.23	6.92
Non-White	64.68%	0–100	53.34
Needing translation	11.00%	0–100	36.00
Migrant workers	0.00%	0–100	0.25
Homeless	0.05%	0–100	2.29
HIV positive	0.03%	0–26.86	0.26
Uninsured	37.50%	0–100	25.60
Privately insured	13.44%	0–81.65	19.61

percentage who needed translation services was 11%. The median percentage who were migrant workers was 0.00% and the median percentage homeless was 0.05%. The median percentage identified as HIV-positive was 0.03%. The median percentage uninsured was 37.50% and the median percentage privately insured was 13.44%.

Final model results. Results for the final models predicting scope and volume of enabling services respectively are shown in Table 2. There was no association between grant revenues and the scope (number of types) of services. Grant revenues per encounter were independently negatively associated with the volume of enabling services, with each dollar per encounter associated with 1.2% fewer enabling encounters. (When an outcome is log-transformed and the predictors are not, every 1-unit difference in each predictor is associated with a [100*coefficient]% difference in the outcome.[35]) Net revenue per encounter was unrelated to scope of enabling services but was positively associated with volume, with every additional dollar per encounter associated with 1.5% more enabling services.

The number of managed care contracts was positively associated with both the scope and volume of enabling services. An average of 26 more managed care contracts was associated with one more type of enabling service (but only 15 of the 841 health centers in this sample had 26 or more managed care contracts). Every managed care contract was associated with 3.6% more enabling encounters per year.

The number of health center staff members was also positively associated with both a broader scope of enabling services and a higher volume of enabling encounters. Given a coefficient for the association between the log-transformed number of staff and the (untransformed) scope of enabling services of 0.694, every one percent increase in number of full-time equivalent staff (FTE) was associated with a 0.694/100=0.00694 increase in the number of types of enabling services. (When a predictor is log-transformed (i.e., log[variable]) and the outcome is not transformed, every 1% difference in the predictor is associated with a [coefficient/100] unit difference in the outcome.[35]) This implies that having 144% more FTEs was associated with the provision of one additional type of enabling service. Every additional full-time staff member was associated with just under one percent (0.8%) additional enabling encounters.

Conversely, staff caseload was negatively associated with both the scope and volume of enabling services. On average, every additional set of 143 patients per staff member per year was associated with provision of one fewer type of enabling service and every additional patient per staff member per year was associated with 1% fewer enabling encounters during the year.

Health centers in rural counties on average provided about one less type of enabling services (−0.851) than non-rural health centers, but the same number of encounters as others.

Patient population demographics were generally unrelated to service provision. There were no associations between the percentages of patients who were female, non-White, in need of translation services, or HIV positive, and the scope or volume of enabling services. Health centers with more elderly patients tended to provide a *lower volume of enabling services, although not a smaller range of service types: Every 1% more patients who were elderly was associated with 6.2% fewer enabling encounters provided in the study year.*

Table 2.

MULTIPLE REGRESSION MODEL RESULTS: ASSOCIATION BETWEEN CENTER AND PATIENT ATTRIBUTES AND ENABLING SERVICES (SAMPLE SIZE IN EACH MODEL=841)

	Scope of enabling services			Volume of enabling services (log-transformed)		
Covariate	**Parameter estimate**	**Standard error**	**Pr >|t|**	**Parameter estimate**	**Standard error**	**Pr >|t|**
Intercept	6.398	1.154	***	5.067	1.478	***
Health center attributes						
GRE	−0.002	0.002	NA	−0.012	0.003	***
NRE	0.006	0.005	NA	0.015	0.007	*
Number of MCC	0.038	0.011	***	0.036	0.016	*
Number FTE	0.694	0.108	***	0.008	0.001	***
Staff Caseload	−0.007	0.002	***	−0.010	0.002	***
Rural	−0.851	0.329	**	−0.559	0.464	NA
Exurban	0.209	0.213		−0.508	0.301	NA
Patient population (%)						
Female	−0.015	0.014	NA	0.015	0.020	NA
Elderly	0.001	0.018	NA	−0.062	0.026	*
Non-White	0.002	0.004	NA	0.006	0.005	NA
Need Translation	−0.005	0.004	NA	0.004	0.005	NA
Migrant Workers	0.024	0.006	***	0.025	0.009	**
Homeless	0.012	0.005	*	0.021	0.007	**
HIV-Positive	−0.050	0.065	NA	0.181	0.092	NA
HIV-Negative	0.016	0.005	**	0.032	0.008	***
With Private Insurance	0.029	0.009	**	−0.010	0.013	NA
Adjusted R-Squared	15.26 % (Parameter Estimate/ Scope of Enabling Services			28.13 % (Parameter Estimate/Volume of Enabling Services (log-transformed)		

*P<0.05, **P<0.01, ***P<0.001
GRE = Grants Revenue Per Encounter
NRE = Net Revenue Per Encounter
MCC = Managed Care Contracts
FTE = Full-time Equivalent Staff
NA = Not Applicable

Three sets of coefficients for patient need were significant: the percentages of patients who were migrant workers, homeless, and uninsured were all positively associated with both the scope and the volume of enabling services. The strongest association between patient population vulnerability and enabling service scope was for the proportion of patients who were migrant workers: a 42% difference in the proportion of patients who were migrant workers was associated with having one more enabling service. Every 1% increment in the proportion of patients who were migrant workers was associated with 2.5% more enabling encounters; every 1% of patients who were homeless was associated with 2.1% more enabling encounters, and every 1% of patients who were uninsured was associated with 3.2% more enabling encounters.

The percentage of patients with private insurance was also positively associated with the scope of enabling services, with a 35% higher proportion of patients privately insured being associated with offering one more type of enabling service. However, private insurance was unrelated to enabling service volume.

Discussion

Although multiple regression results indicate that both health center capacity and patient needs affect enabling service provision, the associations were not always those expected. The first puzzle is why health centers with higher grant revenue per encounter provided a lower volume of enabling services. Between 2001 and 2005, the number of people seen at federally funded health centers increased from 10.3 million to 14 million people, in part through 349 grants to existing health centers.[36,37] At least in the short run, the increase in the number of people served may have competed with provision of enabling services. Funders may wish to track enabling services explicitly, as well as fund specific enabling services for which individual health centers have identified needs. Some enabling services may also be provided or enhanced through in-kind contributions from local organizations or individuals. For instance, if a small proportion of people in an area speak a language, it might be possible for volunteers to provide translation assistance for specified hours each week.

The lack of association between overall net revenue per encounter and the scope of enabling services was congruent with McAlearney's null results between prior financial performance and likelihood of adding or dropping enabling services.[13] At the same time, the positive association between net revenue and the volume of enabling services was in keeping with Beauvais et al.'s finding of positive cross sectional associations between large differences in net revenue and the percentages of patients receiving some preventive services,[20] as well as with a positive association between financial margin and service extensiveness in a previous study in outpatient substance abuse treatment.[21] Health centers, accustomed to scarce resources, may respond to slack resources by expanding existing services rather than adding new services. This may be particularly true for enabling services provided by specialized staff that require hiring new people. Given a median net revenue in the current sample of only 30 cents per encounter, this conservatism seems judicious: if revenues subsequently decreased, it would be both easier for the center and less disruptive to patients to reduce hours for a given service, for instance, than to eliminate one entirely.

The one financial factor positively associated with both the scope and volume of enabling services was managed care; this is consistent with some prior findings from other types of providers.[22,23] It is possible that, in addition to a general emphasis on prevention and continuity of care, managed care contracts allow health centers to cover fixed costs and thus free resources to cover enabling services. It is also possible that some managed care contracts explicitly cover enabling services, such as transportation and case management, that payment structures such as capitation encourage more proactive strategies to facilitate service access, and/or that health center capacity to enter multiple managed care contracts also indicates capacity to provide broader ranges of enabling services to more patients. In any case, the current findings might alleviate health center Chief Executive Officer (CEO) or trustee concerns that managed care undermines service quality by increasing administrative burden. This is not to say that such a burden does not exist; however the net effect on enabling services appears to be positive. For their part, managed care payers should find community health centers attractive because they are better equipped than other ambulatory care providers to support continuity of patient care.

We noted above a potentially negative side effect of rapid health center expansion for enabling service provision. In contrast, the positive associations between health center staff size and enabling services indicate that the recent federal health center growth initiative may have enhanced provision of these services by increasing the size of health centers, as the median number of full-time equivalent staff increased from 54 in 2001 to 60 in 2004.[5,37–39] This finding is in keeping with studies conducted in other health care settings that have found positive associations between organization size and the number of services provided.[24,25]

The negative associations between staff caseload and enabling services, however, serve as a reminder that efficiency may not always be effective. We had expected higher caseloads to detract from enabling services despite the fact that the Bureau operationalizes enabling services as those provided by specialized staff, such as case managers and health educators. This was because of an assumption that other staff would have to work with enabling staff to facilitate access to those services (e.g., identify patients in need of special education services). We believe this subject merits additional research to inform health center leadership about the cons as well as pros of increasing the numbers of patients seen by fixed numbers of staff. Ideally, future investigation will examine correlations between caseload and a variety of aspects of service provision, including preventive service access, quality, and health outcomes. There may also be ways for managers to reduce the negative effects of increasing caseload on service provision, such as process redesigns or information system improvements.

Only rural centers (not exurban) differed from urban centers in enabling services, providing almost one less type of enabling service on average, after controlling for a range of correlates. This finding may reflect more enabling service provision by other facilities (such as local hospitals) in rural areas[27] and/or greater difficulty attracting the necessary staff.[40] These aggregate findings, however, do not reveal the extent to which the scope of enabling services in individual communities meet local needs, a fit that is likely to change as demographics and alternative service options change. This is a reminder of the importance of periodically assessing the local need for specific enabling

services and the extent to which both health centers and other providers are meeting those needs for health center patients.

Contrary to some previous findings from other health care providers,[21,22] patient population attributes were generally unrelated to enabling service provision. We were surprised by the negative association between the percentage of patients over 65 and volume of enabling services, because the elderly tend to be high utilizers of health care and to need more assistance. A previous analysis of a national sample of community hospitals, however, had also found the percentage of people over the age of 65 to be negatively associated with a bundle of outreach and prevention services that included outreach and patient education.[41] It is possible that there are alternative providers for some services, such as shuttle vans for medical appointments, for which elderly patients are more likely to qualify than younger patients, making the elderly less likely to rely upon health centers for these services.

Some of the patient population attributes arguably most closely related to need for enabling services, however, were predictive of more such services. First, the proportion of patients who were migrant workers or homeless was each associated with both scope and volume of enabling services. These associations probably reflect HRSA's particular emphasis on access for these populations. For instance, The Migrant Health Center Program includes funding for outreach by lay workers as well as translation.[42] The larger association between the proportion of patients who are migrant workers and scope of enabling services in comparison with that between the proportion of patients who are homeless and scope makes sense, given that funding for Health Care for the Homeless focuses more on behavioral health care services, which are measured separately from enabling services. The comparable coefficients for both with the volume of enabling services, however, may reflect similarly high levels of overall need for assistance with access. Thus, although the overall associations between grant funding and enabling services were null (for scope) and negative (for volume), targeted funding for some of the most vulnerable subpopulations among those served by health centers may be ensuring that more support is available where it is most needed.

Finally, payer mix does appear to affect provision of enabling services. This study finding's were consistent with McAlearney's[13] in the associations between the percentage of patients without insurance and greater enabling service provision.[13] The absence of health insurance is a well-documented barrier to health care.[43,44] Thus, it is reassuring from a public policy perspective to see that health centers with higher proportions of uninsured patients tend to provide more enabling services. At the same time, the positive association between the proportion of patients who are privately insured and scope of enabling services may indicate that having more patients with private insurance makes it possible for health centers to provide a greater range of services. Another possibility is that some health centers have expanded their enabling service offerings in order to attract patients with private insurance. Either interpretation indicates that serving privately insured patients may enhance access for everyone served by community health centers.

Limitations. This study has limitations. First, the UDS on federally funded community health centers derives from unaudited annual reports from these facilities. Although HRSA's documentation provides detailed operational guidance, administra-

tors' interpretations and capacity to track center operations and patient characteristics undoubtedly vary. The net revenue measure is flawed in that revenue is reported on a cash basis and expenses on an accrual basis.[15] The result may be to understate available resources, because expenses for non-cash items such as depreciation are deducted from accrued revenue. The rurality of health centers' locations was measured at the county level, which is a crude measure of markets. Finally, the current investigation included a broad range of services characterized as enabling; future research might study individual enabling services in more detail.

Conclusion

Federally funded community health centers have been a key component of U.S. health care for the underserved for 40 years. Enabling services represent health centers' commitment to ensuring access for these populations. The reality, however, is that such services are expensive and difficult to sustain. The current study found that financial margin as measured through net revenue was related to the volume of enabling service provision. Health center staff size and caseload were the elements of organizational capacity most consistently predictive of enabling service provision, although the effect sizes were relatively modest. One potential indirect benefit of the federal health center growth initiative may be the attendant increase in the average health center scale of operations,[4,37] which findings here suggest support greater enabling service provision.

The positive associations between managed care and enabling services also indicate that payers can affect the types of services provided. Managed care appears to have some positive effects for federally funded health centers. One way state policymakers may support enabling services is through the structure of Medicaid managed care policies. Medicare is also a significant payer for health centers, especially in rural areas.[4] Federal policymakers might also support better ambulatory health care access by enhancing Medicare payments for enabling services. Finally, this study adds to previous evidence[13] that federally funded health centers tailor their services to the needs of their most vulnerable patients.

Notes

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