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RESEARCH ARTICLE

Federally Qualified Health Center Substitution of Local Health Department Services

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Introduction: Strategic and budgetary considerations have shifted local health departments (LHDs) away from safety net clinical services and toward population-focused services. Federally Qualified Health Centers (FQHCs) play an increasing role in the safety net, and may complement or substitute for LHD clinical services. The authors examined the association between FQHC service levels in communities and the presence of specific LHD clinical services in 2010 and 2013.

Methods: Data from LHD surveys and FQHC service data were merged for 2010 and 2013. Multivariate regression and instrumental variable methods were used to examine FQHC service levels that might predict related LHD service presence or discontinuation from 2010 to 2013.

Results: There were modest reductions in LHD service presence and increases in FQHC service volume over the time period. LHD primary care and dental service presence were inversely associated with higher related FQHC service volume. LHD prenatal care service presence, as well as a measure of change in general service approach, were not significantly associated with FQHC service volume.

Conclusions: LHDs were less likely to provide certain clinical services where FQHCs provide a greater volume of services, suggesting a substitution effect. However, certain clinical services, such as prenatal care, may complement the public health mission—and LHDs may be strategically placed to continue to deliver these services.

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INTRODUCTION

Local health departments (LHDs) play a crucial role in maintaining and improving the health of communities in the U.S. However, political and budgetary conditions, as well as a nationwide shift to an emphasis on providing population-focused services, have led to a recent decline in the range of clinical services that a typical LHD provides.[1,2] Studies have not fully examined how these changes within LHDs relate to those of other safety net providers, such as Federally Qualified Health Centers (FQHCs). First launched in 1965, FQHCs have increased their role in providing care for uninsured and Medicaid-eligible populations dramatically in the past decade.[3] It is possible that FQHC service increases are enabling LHDs to reduce their clinical service portfolio and focus instead on essential community-wide population health assurance responsibilities, more closely related to their public health mission—an approach recommended by the National Academy of Medicine.[1,4,5]

FQHCs are awarded significant federal grants to support non-reimbursed care as well as general infrastructure and staffing improvements.[6] As a result, FQHC services were resilient in the face of state and local budget cuts resulting from the 2008 recession, which had a

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substantial effect on LHD activities.[7] In fact, FQHCs received substantial federal investment from the American Recovery and Reinvestment Act of 2009, which committed over $2 billion in federal money to meet rising service demands and to address needed capital improvements at FQHCs.[8] This led to a public health and safety net care network with a larger FQHC contribution than seen prior to the recession.[9] Increased federal funding for state Medicaid programs during the scale-up of the Affordable Care Act (ACA) from 2013 further increased the stability of funding for FQHC service delivery.[3]

LHD–FQHC collaboration can reduce unnecessary duplication of services, lower the cost of care, and minimize safety net service gaps in the community—all crucial steps for meeting ACA goals that focus on improving equity, efficiency, and effectiveness of healthcare delivery.[10] Substantial variation in the range of clinical and assurance services that LHDs pursue persists—this variation may be partially driven by the presence and quality of LHD–FQHC interactions.[2,11]

One factor driving both LHD and FQHC clinical service delivery may be entrepreneurial interest in providing Medicaid-reimbursable care.[1] Medicaid can provide substantial funding for LHD activities; in 2010, LHDs receiving more than 50% of their revenue from Medicaid sources had per capita expenditures that were almost twice as high as those receiving less than 50% Medicaid revenue.[12] However, LHDs that discontinued clinical services between 1997 and 2008 interacted with a larger number of community partners and were located in states with larger increases in Medicaid spending than LHDs that continued providing clinical services.[1] This supports the notion that higher Medicaid outlays in jurisdictions, while potentially incentivizing LHDs to engage in more clinical services, instead may be driving the growth of other safety net providers, and enabling LHDs to focus on their core public health mission. Following this reasoning, LHDs may also feel "crowded out" in their ability or need to provide services, and this may drive decisions around service approaches.[13]

The study focuses on three strategically important services—primary, prenatal, and dental care—where there is also comparable data for both LHDs and FQHCs. LHD primary care service patterns are different from specialized services (prenatal and dental), and allows understanding of interaction patterns from several important perspectives.[14,15]

Primary care, according to the National Academy of Medicine, refers to "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community."[16] These comprehensive services were provided by only a small proportion of the nation's LHDs (11%) in 2013.[17] Primary care services are a resource-intensive activity, and are offered more frequently in larger, metropolitan jurisdictions with stronger financial resources and provider capacity compared to smaller jurisdictions with fewer well-resourced LHDs. A national study, using post-recession data from 2010, has shown an inverse relationship between the presence of LHD primary care services and the presence of FQHC services in a jurisdiction.[2]

Prenatal care, defined in the National Association of County and City Health Officials (NACCHO) National Profile of LHDs (Profile) survey as the provision of direct clinical services for pregnant women, was provided by 27% of LHDs in 2013.[17] Although prenatal care can be categorized as a specialized clinical service, or a facet of primary care, it is often linked to enabling and social services (such as the Special Supplemental Nutrition Program for Women, Infants, and Children) that fall under the broader public health assurance role of an LHD.[14] As a result, even in the face of reductions in other clinical service areas, there is evidence LHDs may maintain prenatal care services.

Dental care, defined broadly in the Profile study as clinical, preventive or public health-related dental services or both, was provided by 24% of LHDs in 2013, most frequently in more populated jurisdictions.[17] Although safety net dental care represents a very small (less than 5%) proportion of overall dental care in the U.S., safety net facilities provide care for a large number of patients who might otherwise have unmet dental needs.[18] Whereas over 70% of FQHC sites provide dental care, there is often insufficient capacity at these sites to meet demand for services.[15,19]

METHODS

Study Sample

The study sought to explore relationships between LHD and FQHC service delivery around clinical services and in a rapidly changing safety net landscape. The aims were to assess whether changes in LHD service presence or discontinuation were associated with increases in FQHC services, and what levels of FQHC services might best predict whether an LHD continued or discontinued offering a service between 2010 and 2013.

Four dependent variables were identified, representing the absence or presence of three LHD services (primary care, prenatal care, and dental care), and the change in a three-level latent class measure of LHD service approach. In separate logistic regressions for each of the three services, models examined the presence of LHD services in 2010 and 2013, and compared these with county-level, logged FQHC patient per capita levels for identical services in

respective years. Then, in another set of three logistic regressions, models compared logged FQHC patient per capita service levels in jurisdictions where LHDs, which offered the service in 2010, discontinued or maintained the service in 2013. Finally, regression models examined whether an LHD may have discontinued enough services to lower their latent class measure, and compared that to the FQHC service variable. In total, seven models were implemented, with three examining service presence, and four examining service discontinuation or reduction in latent class.

This study did not meet the IRB definition of human subjects research that would require IRB approval.

Measures

The dependent variables were drawn from the 2010 and 2013 NACCHO Profile surveys of LHDs, and identified whether each service was offered directly by the LHD or not.[17] The latent class measure was created using LHD responses to 42 Profile service activity questions that relate to personal and population health activities from both years. These activities were used to create three latent "classes" that quantitatively group LHD personal and population health service approaches, based on whether they provide a majority of predefined basic, expanded, or specialized individual- and population-focused services.[20] The three groups, per previously published research, were designated as limited (broad basic population services), core (broad basic population and individual services), and core plus (expanded population and individual services). Bekemeier et al.[20] describes the rationale and methods for construction of the latent classes in a separate paper. These latent class groupings allowed examination of changes in general LHD service approach from 2010 to 2013.

FQHC data for 2010 and 2013 were drawn from the Uniform Data System, a public reporting tool for FQHC grantees who receive federal funding from the Health Resources and Services Administration.[21] From the Uniform Data System, per capita FQHC service utilization, defined by the number of FQHC services delivered in a jurisdiction for each of the three services per 1,000 residents, was calculated. FQHC data were merged with LHD data, using the inclusion criteria of whether an FQHC grantee with available service data was present in an LHD county-level jurisdiction that had a NACCHO Profile survey response for both years (Appendix, available online).

Finally, county-level sociodemographic and health access indicators drawn from the Health Resources and Services Administration Area Health Resource File for years that matched reporting years in the corresponding LHD jurisdiction were included for each observation. These variables included the jurisdiction's Health Professional Shortage Area/Dental Professional Shortage Area status, median household income, metropolitan/rural status, percentage of population aged >65 years, and uninsured rate.

Statistical Analysis

The study implemented an instrument variable approach using a two-stage residual inclusion (2SRI) technique. These 2SRI methods have been shown to be more consistent in non-linear estimates when compared with a traditional two-stage least squares modeling approach.[22] The 2SRI approach involved a first-stage ordinary least squares regression that regressed the proposed instrument variables on the FQHC utilization variables, and a second-stage model that used the first-stage residual as a covariate to control for unobserved confounding.

An ideal instrument variable is associated with changes in FQHC services, but not with LHD services (except as mediated through the FQHC service). Both logged FQHC federal budget level and the state's decision whether to accept the ACA Medicaid expansion were determined to be strong potential instrument variables: larger FQHC budgets were anticipated to be exogenous inputs associated with both higher patient volumes and investment in expansion or renovation of facilities, which would be associated with an increase in patient volume. The two instrument variables were strong predictors of FQHC service levels in a community, and were theorized not to be associated with unmeasured characteristics of communities that may be associated with LHD service presence outcomes. Thus, for each of the seven models, a first-stage ordinary least squares regression model was constructed using two instrument variables—FQHC federal budget (log $ per capita) and state ACA Medicaid expansion acceptance (yes/no)—to address potential endogeneity that could be present in jurisdiction-level FQHC and LHD service changes. Then, the residual from the first-stage regression was used as a control variable in the final second-stage model, where FQHC utilization was a predictor of LHD service presence or discontinuance.

The 2SRI instrument variable models with bootstrapped SEs were constructed to produce OR estimates and CIs for the effect of a 1 log change in FQHC per capita service effect on the LHD service outcome. Performance of the instrument variables was examined by assessing the identification of the FQHC predictor, and confirming homoscedasticity of the first-stage residuals to assess model fit (Appendix Figure 2, available online).

The second-stage instrument variable model produced coefficients of the effect of FQHC service levels on the LHD outcomes. From these models, marginal predictions of LHD service presence or discontinuation at commonly observed levels of each FQHC service were produced to facilitate interpretation of the predictors. Predictive margins were used to present generalized, adjusted treatment means that represent an average response at specified levels of a predictor.[23] Analyses were conducted using R, version 3.2.3, and Stata, version 14.

RESULTS

In the sample of LHDs (N=371), 16 (4.5%) had primary care services and discontinued them between 2010 and 2013; 34 (9.5%) were providing prenatal services and discontinued them; and 34 (9.6%) had dental services and discontinued them (Table 1). There was minimal overlap of LHDs in each of the groups, suggesting that, over the period, LHD leaders appeared to focus on eliminating specific services, rather than a broad set of services. Only 28 LHDs discontinued two of the three services, and none eliminated all three. FQHCs in the sample showed modest, but statistically insignificant growth in services provided over the period 2010–2013, with a mean increase of 20 medical care and 12 dental care visits for each 1,000 residents in a jurisdiction (Table 2).

Table 1. Descriptive Statistics for 371 LHDs Included in Sample

Jurisdiction characteristics	Included LHD jurisdictions, % (N=371)	2010, *n* (%)	2013, *n* (%)	Discontinued service (when present in 2010), *n* (%)
% Metropolitan (RUCC 1–3)	246 (66)			
% Designated HPSA	143 (39)			
% Designated DPSA	76 (21)			
LHD primary care services		75 (20)	60 (17)	16 (23)
LHD prenatal care		145 (40)	134 (37)	34 (24)
LHD dental care		167 (46)	147 (41)	34 (21)
LHD latent (service approach) classification				Lowered latent classification: 43 (12)
Limited		213 (57)	210 (57)	
Core		61 (16)	52 (14)	
Core plus		97 (26)	109 (30)	

DPSA, dental professional shortage area; HPSA, health professional shortage area; LHD, local health departments; RUCC, rural urban continuum code.

In Table 3, the seven regression models are presented in columns, with the OR indicating, depending on the model, whether higher FQHC service levels in a year were associated with a higher likelihood of presence of the related LHD service, or with discontinuation of the related LHD service. Higher FQHC medical and dental service levels were significantly and inversely associated with LHD service presence. A 1 log increase in per capita FQHC medical services in a jurisdiction was associated with a 33% reduction in the likelihood of presence of primary care services at an LHD (OR=0.670, p=0.009).

To assist in interpretation of the findings, marginal predictions were presented for a range of commonly observed FQHC service levels for each service presence or discontinuation outcome (Figure 1 and Appendix Figure 3 [available online]). Jurisdictions where FQHCs offered general medical services at a rate of five visits per 1,000 residents in either year were located in jurisdictions with LHDs that had a 42% likelihood of offering the service, and a 16% likelihood of discontinuing the service by 2013 if the LHD had offered the service in 2010. However, if the FQHC services were provided at a rate of 200 per 1,000 residents, the LHD would only have a 14% likelihood of offering the service, and a 27% likelihood of discontinuing the service if they had offered it in 2010. Likewise, if FQHC dental care was provided at a rate of five services per 1,000 residents in either year, there was a 60% likelihood of an LHD providing the service; if FQHC services were provided at the rate of 100 of 1,000 residents in a jurisdiction, there was a 36% likelihood of LHD dental service presence. A full table of these marginal predictions is included in Appendix Table 3 (available online).

Table 2. Descriptive Statistics for FQHCs in LHD Jurisdictions

	Included FQHC Grantees	
Jurisdiction characteristic	**2010**	**2013**
Number of FQHC grantees	N=742	N=687
Number of FQHC grantees/jurisdiction	Mean=2.00 Median=1 SD=2.54 Min=1, Max=32	Mean=1.85 Median=1 SD=2.18 Min=1, Max=27
County level: Per capita medical care services/1,000 population	Mean=410.6 Median=116.7 SD=1,363.7	Mean=432.4 Median=117.3 SD=1,348.5
Per capita prenatal care services/1,000 population	Mean=7.42 Median=1.03 SD=33.16	Mean=5.98 Median=1.28 SD=19.22
Per capita dental care services/1,000 population	Mean=107.1 Median=20.2 SD=441.6	Mean=119.2 Median=24.6 SD=595.0

FQHC, federally qualified health center; LHD, local health department.

Table 3. Instrumental Variable-Adjusted Logistic Regressions of FQHC Service Change on LHD Service Presence

Predictor of LHD service	LHD primary care		LHD prenatal care		LHD dental care		Reduction in LHD latent class from 2010–2013
	Presence in either year	Discontinued in 2013	Presence in either year	Discontinued in 2013	Presence in either year	Discontinued in 2013	
Difference in FQHC per capita service[a]	**0.670* (0.496, 0.905)**	1.176 (0.613, 2.256)	0.879 (0.693, 1.115)	1.125 (0.535, 2.369)	**0.663** (0.523, 0.840)**	1.627 (0.945, 2.802)	1.348 (0.882, 2.066)
n	701	134	701	171	611	266	200

Note: Boldface indicates statistical significance (*$p<0.01$; **$p<0.001$). Data presented as OR (95% CI).
[a]1 log increase.
FQHC, federally qualified health center; LHD, local health department.

There were directional effects for discontinuation of each of the services and the latent class grouping. This may indicate a higher likelihood of LHDs discontinuing services in the presence of higher FQHC service volume; however, none were significant at the $p=0.05$ level. This may be due to the small sample of LHDs who offered the services in the baseline year, and the reduction in power that results from the use of instrument variable methods. There were significant effects of the service discontinuation outcome in naïve logistic regression models, which did not include the instrument variable–derived first-stage residual.

DISCUSSION

Higher FQHC service volume in a jurisdiction appears to be inversely associated with the presence of primary care and dental services at LHDs. However, LHDs appear to be more likely to maintain prenatal care services, even when FQHCs in their jurisdiction also provide prenatal services at higher volumes. Even though FQHCs, as a condition of funding, are required to offer many nonclinical and enabling prenatal services, such as outreach, transportation, and identification of additional health services available, LHDs may be able to provide supplementary nonclinical prenatal-related social services in a manner more responsive to community needs.[6] For example, many LHDs provide other services that may be more closely suited to the LHD mission of population wellness, early intervention, and prevention, such as Women, Infants, and Children (65%) and Maternal Child Health Home Visits (60%).[17] Additionally, population-focused early intervention services are often supported by categorical funding for which LHDs may have little discretion around how funds are spent, and be "obligated" to continue providing certain services.[24] "Crowd out" might explain the more direct substitutive effects seen around dental care, as there may be a limited number of providers and infrastructure available to provide dental care to low-income populations in some jurisdictions.

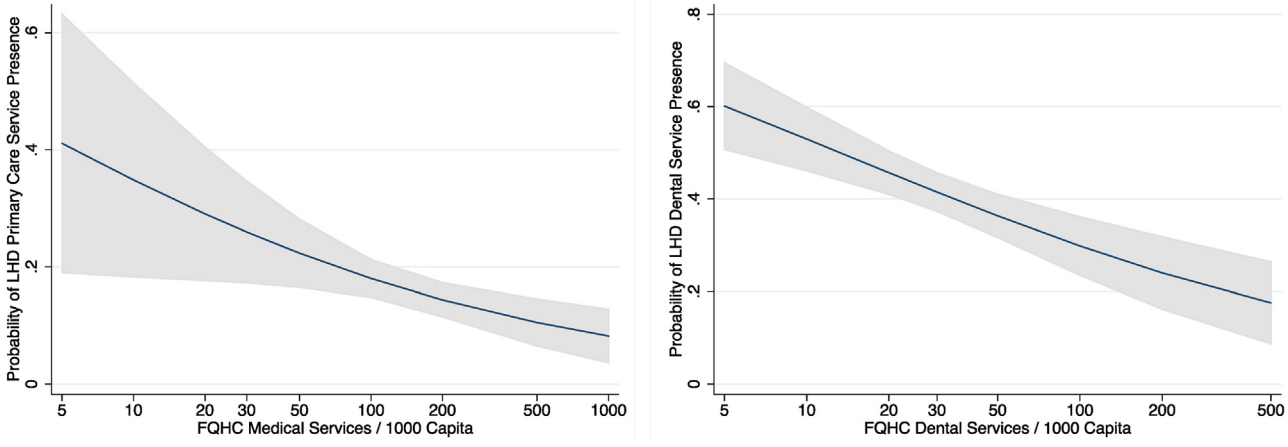

Figure 1. Marginal predictions of LHD medical and dental service presence based on FQHC service levels.
Note: 95% CIs shaded.
FQHC, federally qualified health center; LHD, local health department.

Studies suggest that standard community characteristics may assist LHDs in deciding whether they should provide clinical services.[25] However, service decisions are based on a number of contextual factors including assessed need, available community partners, care reimbursement mechanisms, and local provider constraints.[1,11,26] More research is needed to look into factors that might drive local variation in FQHC service arrangements. Staff training, provider capacity, and state funding restrictions may all affect services offered by FQHCs.[27,28]

These findings offer implications for the changing role of LHDs around the assurance of community health provision. The ACA promotes local assessment of health needs and a community-level responsibility for population health outcomes.[29] Although FQHCs are specifically tasked with delivering personal health services, and, as federally funded entities, have a consistent national mission to underserved populations, LHDs are responsible for assuring broad community health needs are met, and exhibit wide variation in the activities they carry out to meet these needs.[12] LHDs, therefore, are well placed to lead community-wide work with FQHCs and other providers to ensure clinical services respond to community needs. The National Association of Community Health Centers has identified certain approaches an LHD could take: connecting FQHCs with communities and stakeholders; providing a population-based perspective to FQHC activities and communications; using shared data to identify populations, geographic areas, and partners for collaboration; and working with FQHCs to provide referrals, co-location, or purchasing of population health services.[10] To ensure appropriate dissemination of best practices, state health agencies might also identify a "minimum package" of public health services, to serve accountability standards to which LHDs can be held to in the context of local community need.[30]

Further research is needed to examine how variation in LHD–FQHC service provision might drive differential healthcare access and utilization, particularly among the vulnerable populations they both serve. In light of potential changes to the ACA legislation in coming years, there is a need for evidence to inform the debate over the effective organization of safety net care, and whether communication and collaboration around these services may be affecting access to safety net health care.

Limitations

This study is not without limitations. While the timeframe examined (2010–2013) was a critical period for safety-net structural changes, the study was not able to characterize other substantial changes in partner interaction that occurred over prior decades. There were also limitations in assessing LHD service provision patterns; although the Profile survey is the most comprehensive national data source on LHD activities, it does not identify variation in LHD services beyond their presence or absence. Additionally, although the use of instrumental variables allows strong inference into association between FQHC and LHD service changes, their performance relies on several assumptions around the mechanisms of federal and state funding of safety-net care.

CONCLUSIONS

LHDs with scarce resources may be compelled to discontinue clinical services being adequately provided by other organizations in the community, and instead invest in core public health assurance activities. The growth in Medicaid coverage in some states and the expanded reach of FQHCs since ACA enactment present opportunities for recasting of the role of safety net care providers. Examining interactions in safety net coverage, and how changes in providers affect access to care and care outcomes, will be critical for determining if communities are meeting ACA goals for adequate service coverage and improved population health outcomes.

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SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at https://doi.org/10.1016/j.amepre.2017.06.006.

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