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Linkages Between Patient-Centered Medical Homes and Addiction Treatment Organizations: Results from a National Survey

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Abstract

Background—To meet their aims of providing comprehensive and coordinated care, patient-centered medical homes (PCMHs) need to coordinate services for individuals with substance use disorders. Yet, the 14,000 addiction treatment (AT) organizations across the U.S. that provide services for more than 1 million individuals daily are generally ill-prepared to work with PCMHs (e.g., AT organizations often lack electronic health records).

Objectives—To examine the extent to which addiction treatment (AT) organizations have formal linkages through contracts with PCMHs; to identify key dimensions of linkages between PCMHs and AT organizations (e.g., shared use of electronic health records); to identify characteristics of AT organizations and their environments associated with these linkages.

Methods—We draw on data from a 2014 nationally-representative survey of directors and clinical supervisors from 695 AT organizations (n=1,390 survey respondents).

Results—38% of patients across the nation are receiving treatment in AT organizations linked by contracts to PCMHs. This number increases to 51% in states that expanded Medicaid (vs. only 6.2% of patients in non-Medicaid expansion states). Yet, the great majority of linkages are

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relatively weak; they do not include the exchange of patient information. Results from multivariable analyses show that larger, non-profit and publicly-owned AT organizations, as well as those located in the northeast and in states that expanded Medicaid coverage, are more likely to have contracts with PCMHs.

Conclusions—Without stronger linkages between AT organizations and PCMHs or the development of other models that integrate services, individuals with SUDs may continue to receive uncoordinated care.

Keywords

Patient-centered medical homes; addiction treatment organizations; care coordination

The patient-centered medical home (PCMH) has become a widely-accepted model for the organization and delivery of primary medical care in the US (1). Recognizing that PCMHs can play an important role in coordinating care for individuals with substance abuse disorders (SUDs), several national bodies, including the American Academy of Family Physicians (2014), have issued reports promoting the inclusion of SUD services in PCMHs (2).

An estimated 10% of individuals over age 12 in the US have SUDs (3–5) . These individuals suffer from a high prevalence of physical and psychosocial problems, including unemployment, homelessness, and mental health disorders, that require coordinated services. Further, individuals with SUDs often require multiple treatment episodes over many years (6), suggesting the need for coordinated, longitudinal monitoring of care, as PCMHs provide for individuals with other chronic diseases (7).

Yet, PCMHs face challenges in coordinating care for individuals with SUDs (8). On the one hand, PCMHs might choose to deliver their own addiction services to meet their patients' needs. **But, this approach would be costly**. PCMHs would likely need to hire and manage specialist SUD providers. On the other hand, PCMHs could form linkages with the 14,000 addiction treatment (AT) organizations across the US that provide services for more than 1 million individuals with SUDs daily (3). Such linkages could include, for example, the sharing of electronic health records. We focus on this latter option because AT organizations provide the great majority of treatment for individuals with SUDs.

Nonetheless, AT organizations are generally ill-prepared to work with PCMHs (9). The AT system developed separately from mainstream medical and mental health care, and so the organization, financing, and geographic location of AT programs have been separate from mainstream health care institutions (10). As a consequence, many AT organizations are under-resourced; lack slack resources to invest in technology; rely on para-professional rather than professional treatment staff; and commonly focus on helping clients initiate the 12-steps to the exclusion of medication-assisted therapies and other evidence-based practices (11).

Thus, this paper has three objectives: to examine the extent to which PCMHs have formal linkages with the nation's AT organizations through contracts; to identify key dimensions of

linkages between PCMHs and AT organizations (e.g., shared use of electronic health records); and to identify characteristics of AT organizations and their environments associated with these linkages.

Method

We draw on methods and data from the National Drug Abuse Treatment System Survey (NDATSS), which comprises six prior surveys of addiction treatment programs conducted between 1988 and 2011 ((11); see Appendix A for more details). From November 2013 to June 2014, we collected a 7th wave of data.

Sampling frame and sample

The NDATSS-2013 employs a stratified random sample of the four main types of programs in the US AT system: outpatient opioid treatment programs **(OTP); outpatient non-OTPs**; inpatient programs; and residential programs. To ensure national representativeness of the sample, we randomly selected ATs from SAMSHA's 2011 national census list of programs.

Response rate and survey weights

We contacted 751 organizations and 695 agreed to participate, for a response rate of 92.5%. We developed survey weights to address possible non-response bias and ensure that the sample was nationally representative (12).

Data collection, reliability and validity

Directors and clinical supervisors were asked to complete telephone surveys that covered a range of topics concerning financing and delivery of AT services, including client demographics, referral sources, staffing, assessment protocols, services provided, quality improvement, and accreditation. We followed established methods to maximize reliability and validity in phone surveys (13). Results from several analyses provide support for NDATSS data reliability and validity (14).

Dependent variable

The survey provided directors with this definition of a patient-centered medical home:

> "… Patient-Centered Medical Home (PCMH) (also called a health home) is a model to integrate health care that were described in the 2010 Affordable Care Act. These models are arrangements in which providers coordinate health care, and may be financially responsible, for a patient population."

Directors were then asked if they (1) had signed a contract with one (or more) PCMH; (2) plan to sign an agreement with a PCMH; (3) are in discussions about joining a PCMH; (4) no current intention of joining a PCMH. Using these data, we created a four-level categorical variable for use in generalized logit models (with "no current intention" as the referent category). They were also asked questions about key characteristics of the PCMHs and their contracts with PCMHs, including PCMH governance and funding; access to electronic health records (EHR); and inclusion of financial incentives for quality and cost control.

Predictor variables

We used four well-established models of organizational adaptation to their environments to identify the variables below that may be associated with AT linkages with PCMHs (15, 16).

Government policy—We used a dummy variable to measure if the AT organization is located in a state with Medicaid expansion (1= yes, 0= no).

Market factors—Directors reported their perceptions of the extent to which there have been increases in the level of competition their organizations face in the past year using a five-point Likert scale (1= no extent, 5=a very great extent). Similarly, directors reported the extent to which their organization currently faces competition, using the same five-point scale.

Organizational and managerial characteristics—Directors indicated organizational ownership (public, private for-profit, private not-for-profit). We also used data from directors to measure accreditation from the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) or Commission on Accreditation of Rehabilitation Facilities (CARF).

Staff and information technology—Clinical supervisors reported the percentage of staff members who are professionals (defined as clinical staff members with MD, RN, MSW, **Ph.D**, or other related masters-degrees). They also indicated whether their programs used electronic health records (EHRs).

Control variables—We controlled for several variables that could influence AT linkages with PCMHs, including organizational size (total number of clients served in the past year, as reported by clinical supervisors); AT affiliation with a hospital, mental health center or psychiatric facility; geographic region; percentage of AT clients that are **African American**, Latino or without health insurance. Finally, we controlled for the major types of AT by creating dummy variables for: inpatient; residential; outpatient **non-OTP**; and OTP programs.

Data Analyses

Generalized logit models compared AT organizations that were not involved with PCMHs to AT organizations that: had a signed agreement to join a PCMH; had plans to sign such an agreement; and were in discussions with PCMHs. To avoid sample size reduction due to missing data in the predictor variables, and consequently bias in the regression coefficient estimates, we imputed for missing data five times using the sequential regression multiple imputation method (17) implemented with a SAS callable software IVEware (Institute for Social Research, University of Michigan). All statistical analyses accounted for stratified sampling and sample weights using the SURVEY procedures and accounted for the multiple imputations using the MIANALYZE procedure in SAS 9.4 (18).

Results

Directors in 10.4% of the (weighted) sample reported having signed a contract to work with a PCMH (Table 1); another 7.3% were planning to sign such a contract and, finally, 4.7% were in discussions to consider working formally with a PCMH.

However, when we consider the patient-level of analysis, i.e., when AT organizations are weighted by their number of patients, results differ. Of patients across the nation, 38.2% are receiving treatment in AT organizations that have a contract with PCMHs. This pattern arises because AT organizations that have such contracts are much larger than treatment organizations that do not have these contracts. Further, 51.3% of patients receiving treatment in AT organizations located in states that have expanded Medicaid coverage are linked to a PCMH vs. only 6.2% of patients located in non-expansion states.

Table 2 shows descriptive statistics for key characteristics of PCMHs and their relationship with AT organizations. The data show that PCMHs that have contracts with ATs (or are planning or in discussion to do so) are mainly governed by hospitals or federally-qualified health centers. The most common source of payment for these PCMHs (two-thirds) is Medicaid. Further, only the minority of the relationships between ATs and PCMHs involve shared use of electronic health records or the inclusion of financial incentives for quality or cost control.

In multivariable models (Table 3), AT organizations in states that have expanded Medicaid coverage were more likely to have contracts with PCMHs and to be planning to do so. Further, private profit AT organizations were less likely than private not-for-profit organizations to have signed contracts with PCMHs; to be planning for contracts; or to be in discussions to do so. AT organizations with higher percentages of professional staff were less likely to be discussing participation in PCMHs.

Having a parent organization was associated with the likelihood of planning for, or discussion of, participation in PCMHs. Larger AT organizations were more likely to have signed contracts with PCMHs. Units that were part of a hospital organization were less likely to be planning for participation in PCMHs; while units with JCAHO-accreditation were more likely to be planning for participation in PCMHs. Finally, compared to AT organizations located in the northeast, organizations located in the southeast, midwest and southwest were significantly less likely to have a signed contract with a PCMH.

Discussion

As of spring 2014, a small fraction of AT organizations reported participation in PCMH arrangements. Only 10.4% had a signed agreement to be included in a PCMH; and, only 7.3% and 4.7%, had plans in place to do so or were in discussions to do so, respectively. Yet, because AT organizations participating with PCMHs are disproportionately large, 38.2% of patients across the nation are receiving treatment in AT organizations that have a contract with PCMHs. Virtually all of such participation is being pursued in Medicaid expansion states. As noted above, 51.3% of patients in these states are receiving treatment in AT

organizations that have contracts with PCMHs, compared with 6.2% of patients in non-expansion states.

These data show partial support for federal and state initiatives to link patients with SUDs with PCMHs. Further, the data support the role of Medicaid expansion as a key driver for linkages between ATs and primary care providers. These results are consistent with Sommers et al. (2013) who found that behavioral health services were a critical need for new Medicaid enrollees in 6 states that were early adopters of Medicaid expansion.

Yet, the majority of PCMHs are either not linking with AT organizations in the formal treatment system or might be choosing to deliver their own addiction services to meet their patients' needs. The current survey cannot evaluate the second possibility. Our data can only suggest that PCMHs are not "buying" these services from the formal treatment system. Further work is needed to determine the extent to which PCMHs are directly delivering these services. Similarly, the data in Table 2 suggest that the great majority of contracts between AT organizations and PCMHs are relatively weak: they do not include the exchange of patient information with EHRs or financial incentives for improving cost and quality of care.

Our results also are consistent with prior studies establishing differences in behavior between for-profit AT organizations and non-profit and public AT organizations (19). Perhaps for-profit AT organizations are not interested in linkages with PCMHs because they typically provide few medical or social services for their patients.

Nonetheless, our study has limitations. These cross-sectional data do not allow us to directly infer causation. Organizational-level data do not allow exploration of individual patient/counselor characteristics. Further, the data are based on director and supervisor responses, which may be susceptible to reporting bias.

Despite these limitations, we conclude that without stronger linkages between AT organizations and PCMHs or the development of other models that integrate services, individuals with SUDs may continue to receive fragmented, uncoordinated care. Policy-makers may need to consider alternatives, including regulations that mandate integration, to adequately address individual and population SUD problems.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

AT organization contracts with PCMHs and percentages of patients that these organizations served in the past year

		Organizational level		Patient level	
	N	un-weighted %	weighted %	un-weighted %	weighted %
No	521	74.96	77.62	61.46	53.19
Signed agreement	79	11.37	10.42	28.55	38.22
Planning	59	8.49	7.26	6.80	5.73
In discussion	36	5.18	4.70	3.18	2.86

Table 2

Key Characteristics of contracts between ATs and PCMHs

	Signed (n=79)	Planning (n=59)	Discussion (n=36)
PCMH primarily governed by			
Physicians	6 (13.2)	9 (26.7)	5 (16.1)
A hospital or hospital system	29 (32.3)	12 (17.8)	11 (32.2)
Shared physician-hospital governance	2 (1.6)	0 (0)	0 (0)
A federally-qualified health center	16 (29.8)	17 (27.1)	7 (16.7)
Other	15 (23.2)	14 (28.4)	8 (35.1)
The most common source of reimbursement			
Medicare	5 (7)	2 (4)	1 (3.5)
Medicaid	47 (66.5)	36 (71.9)	18 (63.3)
Safety-net funds	2 (2.7)	2 (3)	2 (11.6)
State and local government funds	5 (9.7)	9 (17.4)	4 (17.9)
EHR access kept by other providers within PCMH			
Yes	26 (39.8)	14 (28.4)	9 (40.1)
No	28 (60.2)	25 (71.6)	13 (59.9)
Give other providers within PCMH access to EHR kept by your staff			
Yes	20 (30.9)	12 (24.4)	8 (43.7)
No	34 (69.1)	26 (75.6)	14 (56.3)
Contractual arrangement with PCMH includes bonuses, penalties or risk-sharing based on overall expenditures			
Yes	10 (19.5)	5 (9.1)	2 (9.7)
No	51 (80.5)	43 (90.9)	25 (90.3)
Contractual arrangement includes bonuses, penalties, or risk-sharing based on health care quality indicators			
Yes	11 (25.1)	3 (7.9)	3 (11.1)
No	50 (74.9)	43 (92.1)	23 (88.9)

Table 3

Odds ratio estimates (95% confidence interval) of the generalized logit model assessing factors associated with AT organization contracts with PCMHs (n=695) Significant effects are in bold.

	Signed vs. No	Planning vs. No	Discussion vs. No
State Expanded Medicaid			
Yes vs. no	**3.0 (1.0, 8.8)**	**4.4 (1.3, 14.9)**	0.8 (0.3, 2.4)
Extent of competition			
Some/great/very great vs. no/a little extent	2.4 (0.9, 5.9)	1.8 (0.7, 5.1)	2.0 (0.7, 6.1)
Increase in competition			
Increase vs. Decrease/no change	1.3 (0.6, 3.0)	1.6 (0.6, 4.1)	2.3 (0.9, 6.2)
Organization Ownership			
Private for-profit vs. private not-for-profit	**0.2 (0.08, 0.8)**	**0.2 (0.05, 0.7)**	**0.1 (0.02, 0.6)**
Public vs. private not-for-profit	2.0 (0.7, 6.2)	2.8 (0.9, 8.6)	2.0 (0.4, 9.5)
CARF			
Yes vs. no	1.1 (0.4, 3.2)	1.5 (0.5, 4.2)	1.2 (0.4, 3.7)
JCAHO			
Yes vs. no	3.2 (1.1, 9.0)	**2.9 (1.1, 7.7)**	1.8 (0.4, 7.8)
Percentages of Staff Professionals			
51-99 vs. 0-50	0.9 (0.3, 3.2)	1.3 (0.4, 4.2)	**0.2 (0.03, 1.0)**
100 vs. 0-50	0.5 (0.2, 1.3)	0.6 (0.2, 1.3)	0.5 (0.2, 1.6)
Electronic Health Record			
In place vs. no	2.6 (0.6, 10.9)	2.2 (0.7, 7.7)	2.7 (0.4, 17.4)
Planning vs. no	0.6 (0.1, 2.4)	1.8 (0.4, 7.3)	2.1 (0.3, 14.1)
Region			
Southeast vs. Northeast	**0.2 (0.1, 0.9)**	0.5 (0.1, 3.0)	0.2 (0.03, 1.0)
Midwest vs. Northeast	**0.2 (0.1, 0.7)**	0.5 (0.2, 1.7)	0.5 (0.1, 2.0)
Southwest vs. Northeast	**0.1 (0.03, 0.6)**	1.2 (0.2, 8.3)	0.6 (0.1, 4.5)
West vs. Northeast	0.5 (0.2, 1.6)	1.8 (0.6, 5.8)	0.5 (0.1, 1.8)
Owned by Another Organization			
Yes vs. no	1.4 (0.5, 4.3)	**2.9 (1.0, 8.6)**	**4.2 (1.1, 16.3)**
Owned by Hospital			
Yes vs. no	0.3 (0.03, 2.0)	**0.1 (0.02, 0.9)**	0.5 (0.1, 3.0)
Formal Linkages with Mental Health Center			
Yes vs. no	3.8 (0.6, 24.7)	0.7 (0.1, 9.6)	0.4 (0.03, 4.4)
Treatment Type			
Outpatient non-OTP vs. OTP	1.3 (0.4, 3.9)	1.0 (0.3, 2.9)	0.9 (0.3, 2.8)
Inpatient vs. OTP	1.2 (0.2, 6.6)	0.4 (0.1, 2.7)	0.7 (0.1, 8.3)
Residential vs. OTP	1.9 (0.6, 6.3)	0.7 (0.2, 3.0)	1.8 (0.3, 9.5)
Number of Clients			
100-499 vs. 1-99	1.8 (0.5, 7.0)	0.8 (0.2, 2.8)	4.0 (0.7, 22.0)
>=500 vs. 1-99	**4.5 (1.2, 16.8)**	1.5 (0.4, 5.3)	4.3 (0.7, 27.5)
Percentage of Clients w/o Health Insurance			

	Signed vs. No	Planning vs. No	Discussion vs. No
>=50% vs. <50%	1.4 (0.6, 3.1)	**0.3 (0.1, 0.8)**	2.1 (0.7, 6.1)
Percentage of African American SA Clients			
>=10% vs. <10%	1.2 (0.5, 2.9)	0.8 (0.3, 2.2)	**0.3 (0.1, 0.9)**
Percentage of Hispanic SA Clients			
>=5% vs. <5%	1.7 (0.6, 4.4)	**0.4 (0.2, 0.8)**	0.9 (0.3, 2.2)