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A Survey of Information Exchange and Use of Other Health IT in Primary Care Settings: Capabilities in and Outside of the Safety Net

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Abstract

Background.—Advanced use of health IT functionalities can support more comprehensive, coordinated, and patient-centered primary care services. Safety net practices may benefit disproportionately from these investments, but it is unclear whether IT use in these settings has kept pace **and what organizational factors are associated with varying use of these features.**

Objective.—To estimate advanced use of health IT use in safety net versus non-safety net primary care practices. We explore **domains of patient engagement, population health management (decision support and registries)**, and electronic information exchange. We examine organizational characteristics that may differentially predict advanced use of IT across these settings, with a focus on health system ownership and/or membership in an independent practice network as key factors that may indicate available incentives and resources to support these efforts.

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Research Design.—We conduct cross-sectional analysis of a national survey of physician practices ($n=1,776$). We use logistic regression to predict advanced IT use in each of our domains based on safety net status and other organizational characteristics. We then use interaction models to assess whether ownership or network membership moderate the relationship between safety net status and advanced use of health IT.

Results.—**Health IT use was common** across primary care practices, but *advanced* use of health IT functionalities ranged only from 30–50% use. Safety net settings **have kept pace with adoption of features for patient engagement and population management, yet lag** in information exchange capabilities compared to non-safety net practices (OR=0.52 for FQHCs, $p<0.001$; OR=0.66 for other safety net, $p=0.03$). However, when safety net practices are members of a health system or practice network, health IT capabilities are comparable to non-safety net sites.

Conclusions.—**All outpatient settings would benefit from improved EHR usability and implementation support that facilitates advanced use of health IT.** Safety net practices, particularly those without other sources of centralized support, need targeted resources to maintain equitable access to **information exchange** capabilities.

Introduction

Use of electronic health records (EHRs) to document and support healthcare delivery is now common practice following a decade of significant government under the Health Information Technology and Economic Clinical Health (HITECH) Act and corresponding health system investments.^{1,2} Federally qualified health centers and other resource-limited physician practice settings (i.e. the **primary care** safety net) were early proponents of IT-enabled care delivery,^{3,4} with more accelerated EHR adoption prior to, and in the early years of, incentive programs under HITECH compared to all physician settings.^{5–9} However, the EHR capabilities demonstrated in these settings were widely variable in functionality and often were limited to basic electronic documentation and ordering capabilities.^{5,8} Many outpatient safety net providers are now participating in the Medicaid Promoting Interoperability program (a rebranding of Meaningful Use (MU)). Promoting Interoperability requires providers to move beyond core EHR functionality and demonstrate use of advanced EHR features considered necessary for creating value in patient care.¹⁰ However, it is unclear whether safety net providers are prepared to meet these expectations.

Some priority functionalities under PI, including those that support patient engagement and population health management (e.g. use of registries and disease-specific decision support tools), have been part of incentive program requirements in some capacity since Stage 1 MU launched in 2011. And yet, at least among US hospitals, evidence of a digital divide persists with respect to low-resource settings demonstrating “advanced use” of these features (i.e. a higher threshold of these activities beyond what Meaningful Use required).^{11,12} Another advanced feature – demonstration of interoperable health information exchange – has been the targeted focus of more recent health policy prioritization; only starting in 2018 were even minimal requirements placed on demonstrating electronic receipt of information in addition to electronic sending of information to other providers. But, early evidence again suggests a lag in capabilities among lower resourced settings.^{13,14}

From an equity standpoint, it is critical that patients served by safety net settings have access to robust IT-enabled care delivery practices. Among outpatient physician practices more broadly, sites owned by or affiliated with a hospital or health system tend to have greater access to EHR products with advanced functionality.¹⁵⁻¹⁷ This organizational integration offers greater access to centralized IT support services as well as more well-resourced, enterprise-wide EHR vendor solutions intended to support care across the continuum.^{17,18} There is some evidence that practices also achieve similar benefits through independent practice associations (IPAs) or networks similarly designed to pool resources for a more collective approach to advanced IT infrastructure.¹⁹ However, these benefits of health system or IPA affiliation may or may not extend to the safety net. Outpatient safety net providers might be a priority investment for health systems, given acute resource challenges in these settings and heightened need for tools to manage patients' clinical and social complexities. However, if motivated by market incentives and system efforts to facilitate lucrative referrals, these investments in more robust IT may instead be targeted to primary practices with a more generous payer mix and exclude safety-net settings. IPA membership, which often offers payer contracting support as a primary service, may look different among FQHCs and other safety-net providers given their distinct sources of revenue. It is thus critical to understand how safety net settings participate in these different types of networks, and the implications that has for access to and advanced use of health IT capabilities.

Recent descriptive evidence has shown that safety net primary care practices had potentially fewer HIT capabilities, including lower levels of HIT connectivity, but did not parse out other key advanced functions or disentangle the role of ownership and other practice factors (e.g., size) from safety net status.¹⁴ In this paper, we use the same national survey data on physician practices in the United States to understand how safety net outpatient practices compare to other non-safety net outpatient practices in terms of their advanced use of health IT capabilities. Specifically, we examine advanced use of longstanding incentivized health IT functions (e.g., patient engagement and tools for population health management) as well as demonstration of information exchange with other health care providers which is a more recently accelerated health IT policy priority. We ask the following questions: (1) To what extent do safety net practices report advanced use of health IT capabilities at different rates than non-safety net practices?; and (2) Does the relationship between safety net designation and advanced use of health IT capabilities vary according to whether a practice is owned by a health system or participates in an IPA network? These results offer critical insights for policymakers and healthcare communities looking to promote equitable and high-impact investments from improved health IT infrastructure.

Methods

We conducted a cross sectional study of physician practices' advanced use of HIT capabilities using national survey data on physician practices that has been linked with existing data on organizational and market characteristics.

Data

Survey data for this analysis was the physician practice survey of the National Survey of Healthcare Organizations and Systems (NSHOS).²⁰ This nationally representative survey includes primary care and multispecialty practices, and asks respondents comprehensive questions about care delivery practices and performance improvement strategies, as well as key organizational details that may be associated with these efforts such as payer mix, staffing, workplace culture, and available information systems. Development of the NSHOS instrument and sampling frame have been described in detail in prior work,²¹ and survey findings have been widely published.^{17,21–24} The health IT-specific questions were adapted from the National Survey of Physician Organizations and the National Survey of Small and Medium Sized Practices to reflect evolving health IT surveillance priorities that are the focus of these analyses.^{25–28}

The survey utilized a stratified-cluster sampling design, built off of the IQVIA OneKey database, surveying practices with three or more primary care physicians. The IQVIA data is often used as a sampling frame for health care organization surveys, and has been used extensively in research to examine health care organizations and ownership.^{29–33} The survey was fielded June 2017 through August 2018. Of the total 4,976 physician practices, 2,333 responses were received, resulting in a 48.6% response rate.³⁴ The sample of respondent practices looked similar to the national sampling frame based on size, geography, and system characteristics (*See Appendix Table A1*).²¹ This study was approved by the Institutional Review Boards at [institutions blinded for review].

Measures

Health IT Capabilities.—We created four health IT outcome measures. Using data-driven cut points, we defined a threshold for “advanced use” within each domain, and present all measures as binary. This approach is consistent with prior literature analyzing the advanced health IT use digital divide in hospitals.^{11,12} The first measure used six survey questions related to health information exchange, asking clinics whether they received electronic notification of patients’ emergency department visits, hospital admissions, hospital discharges, labs and test results, behavioral health notes, and specialist consult notes. Clinics responding affirmatively to at least four of these capabilities were considered to have advanced information exchange. The second measure used three questions regarding patients’ IT access and engagement: electronic access to their medical records, electronic commenting or inputting of information into their medical records, and communication with their physicians over email. Clinics that reported all three of these capabilities were determined to have advanced patient access and engagement. The last two measures asked whether clinics used decision-support tools (e.g. embedded order sets) and/or registries for patient and population health management, across eight common conditions or services. For each of the latter two measures, if a clinic reported tools in use for seven or more conditions or services, they were determined to have advanced capability. All additional details on measure construction, including exact survey questions and the distributions of participant responses in each composite are provided in Appendix Exhibit A1–A2.

Practice characteristics.—Advanced use of health IT is a complex care delivery strategy shaped by many clinic and market-level factors. We focus on organizational attributes thought to be associated with available resources and perceived realizable benefit as key enabling factors. Our key characteristic of interest is clinic type, where these two factors are potentially at odds. Safety net status suggests resource limitations, but also a setting likely to be oriented toward learning, innovation and improvement.¹⁴ We categorized all clinic respondents based on whether they were a FQHC, an “other safety net” clinic, or a non-safety net clinic. We distinguish between FQHC and other safety net because of the unique regulatory and reimbursement environment tied to FQHC designation. FQHCs self-identified on the survey. We determined other safety net status based on practices’ self-reported revenue mix, designating a practice as safety net if they reported at least 25% of patients as covered by Medicaid or uninsured; this cut-point was defined and underwent sensitivity testing in other recent NSHOS work.¹⁴ We next categorized whether a practice is part of a system or network. We include practice ownership (hospital or system-owned versus independent) as well as an indicator for membership within an Independent Practice Association (IPA) as organizational structures that might facilitate both access to and benefit from advanced use of health IT.^{17,19,27}

Several additional organizational characteristics have been evaluated in past research and found to be significantly associated with greater resource availability and perceived realizable benefit from use of HIT capabilities. This includes: practice size based on total number of providers, including physicians and advanced practice providers (3–5 providers, 6–10, 11–39, and 40+); whether a practice was exclusively primary care versus multispecialty; and employment of advanced practice providers (we categorize practices in the top quartile of APPs as a percent of total practice providers as “high APP utilization”).^{6,15–17,27,35} At the market level, we control for rurality and also calculated a measure of how widespread hospital/health system ownership was in a respondent’s given healthcare market to distinguish between effects of practice-level ownership compared to market-level dynamics due to relative penetration of hospital-physician integration.

Statistical Analyses

We first stratified our sample based on safety net designation (FQHC, other safety net, non-safety net), and generated descriptive statistics for all other measures described above. We conducted bivariate analyses, employing Wald tests (for continuous variables) and Pearson χ^2 tests (for categorical variables) to assess which practice characteristics – including health IT capabilities – varied by safety net designation. For health IT capabilities, we calculated both the percent of practices within each designation that report *any* health IT use within each of our domains, as well as the percent that reach our designated threshold of advanced use.

We used univariate as well as multivariate logistic regression models to test associations between each organizational characteristic and each health IT capability. Finally, because we are particularly interested in how safety net designation and ownership may together influence resources available for HIT investments, we ran an additional model for each outcome where we interact these two measures. We used predicted probabilities to visually

present these results for each HIT outcome. All analyses used survey weights that account for sampling and non-response to better represent the national population of physician practices. Analyses were conducted using Stata 14 software.

Limitations

This survey is nationally representative of primary and multispecialty care practices, but excludes practices with fewer than three providers. These smaller settings are likely to have lower adoption of advanced health IT tools compared to what we present in our sample. Second, this data is cross-sectional in nature and presents health IT adoption rates at a specific point in time (2017–2018) that are likely to have continued changing since the time of data collection. The cross-sectional survey design limits our ability to make any causal claims about the effect of clinic designation, ownership, or any other organizational characteristic we assessed. Survey analysis also relies on practices' self-report of different capabilities. Though these responses could not be independently verified, we have no reason to suspect that veracity of these responses would differ by clinic designation. Finally, survey questions only offered a dichotomous “yes/no” response regarding use of each IT functionality included in our composite outcome measures. These questions do not allow us to assess how often or with what consistency these features are actually used in practice. Our survey instrument also does not capture key determinants relevant to successful and sustainable implementation of advanced EHR use such as organizational orientation toward innovation and improvement, system usability, and meaningful integration with other care delivery strategies.³⁶ More detailed questions that delve into variation in use of IT, and drivers of that variation, are a promising area of continued study.

Results

Characteristics of Practice Sites

Our final analytic sample included 1,776 practices; 414 sites were excluded due to missing data and 143 could not be verified as part of the initial sampling frame. Dropped observations were more likely to be health system-owned and located in non-metropolitan areas compared to our final sample. (Appendix Exhibit A3)

The final sample included 309 FQHCs (17.4%), 420 other safety net practices (23.7%), and 1047 non-safety net practices (59.0%) (See Table 1). We observe significant differences across designations in practice rurality, practice size (by total number of providers) and ownership type ($p < 0.001$ for all). Other safety net practices have the highest percent of sites that are hospital or health system-owned, and FQHCs are most likely to be independent or physician-owned. We also observe that FQHC and other safety net-designated practices are more likely to be multispecialty and more likely to be extensive users of advanced practice providers. Practices are active within each of our health IT domains; when asked if they are using *any* capabilities in each domain, responses ranged from 62.2% of practices engaged in information exchange (i.e. receiving some type of documentation electronically from outside providers) to 94.3% of practices using health IT tools in some way for patient engagement/access to information.

Figure 1 shows how advanced use of HIT capabilities, at or above our designated thresholds, varies across practices' safety net status. Relative to non-safety net clinics, fewer FQHCs and other safety net practices reported use of information exchange capabilities (24% and 29%, respectively, compared to 35% for non-safety net clinics; $p=0.010$). Neither FQHC nor other safety net status was significantly associated with availability of patient engagement features, decision support tools or registries.

Regression Results

Table 2 presents the multivariate models. Univariate models are presented in the Appendix (Exhibit A4). Safety net designation remained a significant predictor for information exchange capabilities. FQHC designation is still associated with lower likelihood of information exchange in adjusted models (OR=0.52 relative to non-safety net clinics; $p<0.001$), as is other safety net designation (OR=0.66; $p=0.03$).

Overall, few characteristics were consistently associated with advanced use of other health IT capabilities. Advanced use of patient access/engagement features was less likely in rural areas compared to metro areas (OR=0.49; $p=0.01$). Counter to expectation, advanced use of decision support tools was less likely in large practices (40+ providers) compared to small (OR=0.48; $p=0.01$) and advanced use of registries was less likely in clinics that are owned by hospitals or health systems (OR=0.66, $p=0.02$) compared to independent/physician group-owned sites.

When we interact safety net designation with ownership type, we still observe a significant independent association between safety net designation and use of information exchange capabilities (see Figure 2). Interactions reveal the importance of considering system ownership and network affiliation. Holding all other characteristics at their means, FQHCs and other safety net clinics have significantly lower predicted probability of advanced information exchange capabilities (16.3% and 14.8%, respectively) relative to non-safety net practices (37.8%). But, this substantial difference is observed only among clinics that are independent or physician-owned. Among practices that are hospital or health system-owned, we observe no differences in information exchange capabilities among FQHC/safety net vs. non-safety net settings. System ownership is also salient in considering use of patient engagement tools, where estimated use of advanced patient engagement features is significantly higher for system-owned FQHCs (58.0%) compared to non-system owned FQHCs (32.5%). No significant interactions between clinic designation and ownership were observed for advanced use of decision support or registry features.

IPA membership among safety net-designated practices plays a similar moderating role as health system ownership. (Figure 3) Among practices not involved in an IPA, FQHCs and other safety net clinics have much lower estimated rates of information exchange capabilities (21.9% and 21.4%, compared to 39.4%). However, among IPA-participating practices, there is no observed significant difference in information exchange capabilities between safety net and non-safety net sites.

Discussion

Using a nationally representative survey of health IT capabilities among physician practices, we find that primary care practices serving higher shares of Medicaid and uninsured patients have adopted advanced use of patient engagement and population health management tools at similar rates to non-safety net practices. These rates are not particularly high, suggesting significant room for continued progress, but this parity is encouraging given the persistent digital divide among US hospitals regarding advanced use of health IT features.^{11,12} Rates of advanced engagement in health information exchange (HIE) are also quite low and here we find that safety net practices lag in capabilities. Hospital or health system ownership moderates this association - among practices that are owned by hospitals and health systems, safety net practices look no different than other practices. Membership within an IPA plays a similar moderating role. These findings highlight that the centralized resources and support from larger networks likely aid safety net primary care practices with implementing HIE activities.

Our findings offer some reassurance that safety net primary care practices are mostly maintaining pace with non-safety net practices in advanced use of health IT features. Use of health IT to engage patients (i.e. electronic communication and contribution of patient-generated health data) as well as for population health management (i.e. through use of registries and decision support tools) have been longstanding priorities of federal health IT policy incentives. Our findings suggest that these early goals have shaped sustained clinic-level investments, and it's encouraging to see continued progress above and beyond minimum required capabilities. Compared to hospitals, where the digital divide persists, primary care clinics are likely better positioned to perceive direct benefits from utilizing advanced patient engagement and population health tools because they are more engaged in long-term relationships and care coordination responsibilities.

In contrast, safety net clinics lag with respect to reported use of HIE capabilities. We specifically asked clinics about electronic receipt rather than sending of electronic documentation, which was only introduced in 2018 as a reporting program metric under Promoting Interoperability. Requirements around demonstrating health information exchange have long been contentious, in part because of the continued development of necessary technical capabilities but also because performance is interdependent with the behaviors of other clinical settings with which a provider shares patients. Our findings indicate that safety net clinics may be struggling to get other organizations that they work with to send them information necessary for coordinated patient care. This is a challenge unaddressed by existing HIE policy incentive structures, which allow eligible clinicians to meet requirements around sending information electronically by only demonstrating these behaviors selectively, with partners that might not include safety net settings.

Our results do suggest the potential value of health system or IPA membership as a way to mitigate the disparities in information exchange capabilities observed across outpatient practices. Participation in these structures can improve access to a more robust EHR vendor product, centralized IT services, and/or resources for upgrades and implementation support that might otherwise preclude ability to adopt HIE capabilities.^{17,19,37} Health

systems and IPA networks also offer a more formalized network through which to develop shared expectations around information sharing practices and are better positioned to participate in payment and delivery reforms that indirectly incentivize advanced use of health IT capabilities (including HIE) by prioritizing care coordination, population health management, and improved transitions of care. Though there are opportunities for safety net settings in pursuing system or network relationships, policy and market dynamics can make this challenging.³⁸ Preserving alternative on-ramps to exchange through continued investment in open HIE infrastructure, with targeted resources and technical assistance for end-users, may disproportionately benefit safety net practices and allow them to remain independent.¹³

Even with facilitated access to HIE, or any advanced health IT functionalities, consistent and sustained implementation is far from guaranteed. This is underscored by the fact that, even among more highly resourced care settings, the number of practices across the total sample that met our “advanced use” criteria within *any* of the four health IT domains remained relatively low (at or below 50%). Our results suggest that the average physician practice – regardless of safety net designation – still needs significant investment and support to integrate advanced health IT capabilities in to care delivery. To maximize impact, use of these tools needs to be more explicitly integrated in to re-imagined models of care delivery.³⁶ Advanced health IT tools will not be utilized – and only contribute to provider burden – if they are cumbersome, confusing, and/or not readily perceived as value-add.³⁹ Clinicians as well as patients need clear use cases and guidance for when and how these tools can be leveraged for enhanced care quality and experience.⁴⁰ Product usability also remains a persistent concern. The EHR Reporting Program, established under the 21st Century Cures Act, is tasked with developing measures of usability specific to developers’ certified health IT products. Measures that evaluate interoperability features are the current program priority, including clinical information exchange and patient data access).⁴¹ Given our findings, it is critical that this Program makes particular effort to incorporate data standards and digitally inclusive functionality requirements that consider the specific needs of safety net settings and the patients they serve. Demonstration and measurement of interoperability features should also explicitly prioritize inclusion of safety net settings in the reach of these features.

Conclusion

In a nationwide survey of physician practices, we find that FQHCs and other safety net clinics have largely kept pace in advanced use of health IT capabilities, but these settings lag in use of robust electronic information exchange. This is particularly true among safety net settings not part of a larger health system nor participating in a practice network structure. There are significant opportunities for health IT to be used strategically to advance coordinated, patient-centric care in the populations served by these under-resourced healthcare settings. Financial support and explicit implementation guidance for how to use these resources in an integrated safety net care model should be a top priority for health systems looking to get ahead of delivery and payment reforms focused on population health and health equity.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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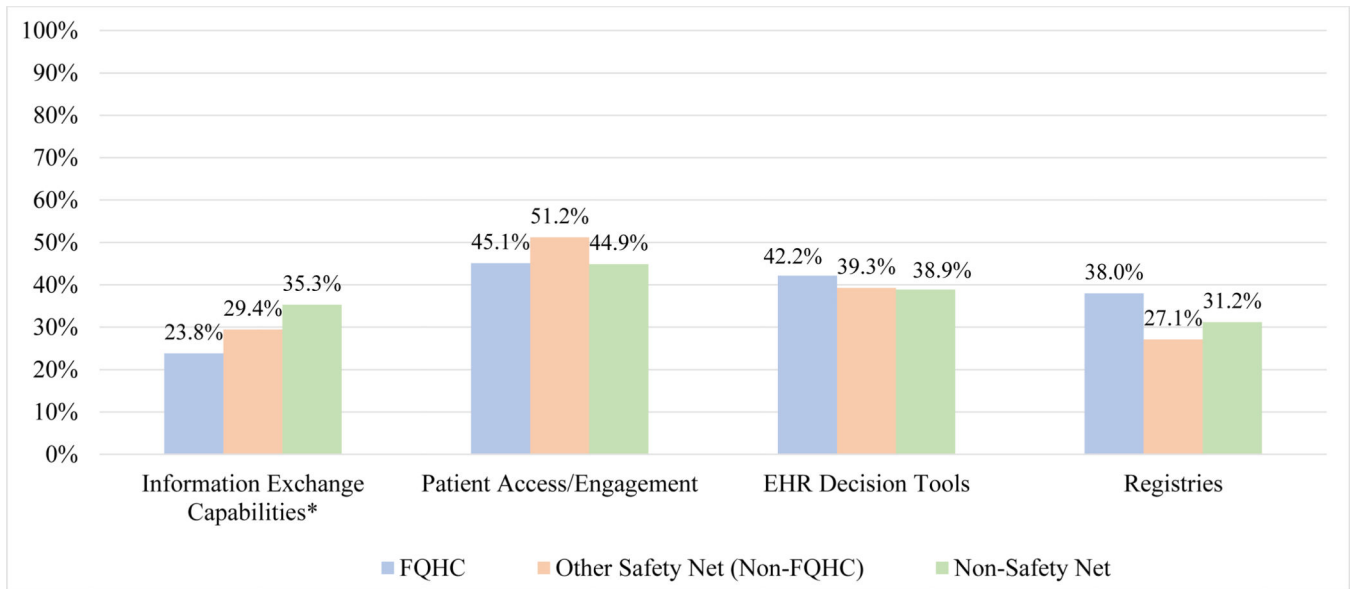


Figure 1.
Advanced Health IT Capabilities, by Safety Net Designation
Note: *P<.05, **P<.01,***P<.001

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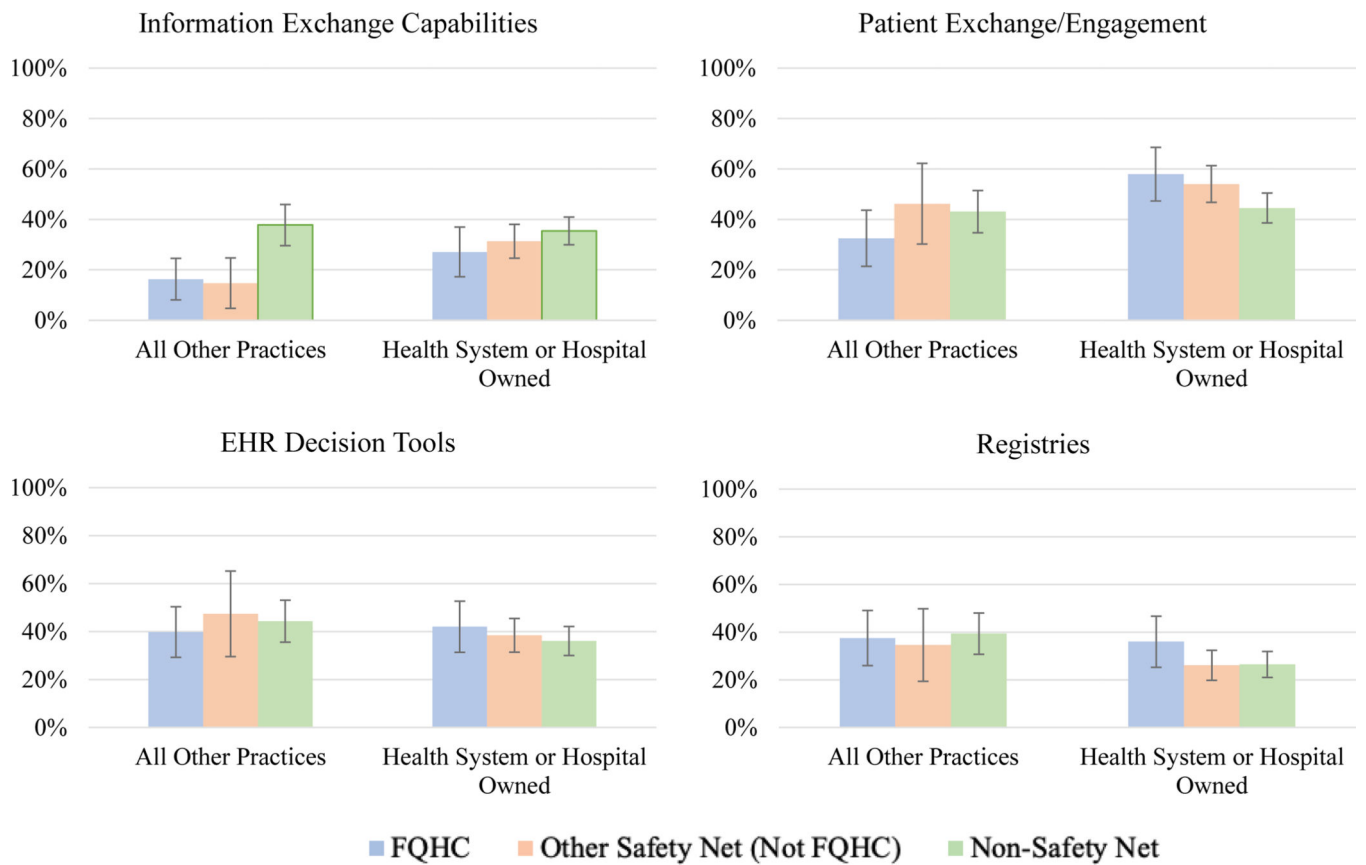


Figure 2.
The Moderating Role of Health System Participation on the Advanced Health IT Capabilities of Safety Net Practices (Adjusted Models)



Figure 3. The Moderating Role of Independent Practice Association Membership on the Advanced Health IT Capabilities of Safety Net Practices (Adjusted Models)

Table 1.

Organizational Characteristics Stratified by Safety Net Designation

| Practice Characteristics (N, %) | FQHCs (N=309) | Other Safety Net Practices (N=420) | Non- Safety Net Practices (N=1047) | All Practices (N=1776) | P Value |
|--|---------------|------------------------------------|------------------------------------|------------------------|-------------------|
| Total Providers (PCPs, APPs, and specialists) | | | | | <0.001 |
| <=5 | 59 (19.5%) | 143 (34.7%) | 408 (39.6%) | 610 (34.9%) | |
| 6–10 | 100 (33.0%) | 110 (26.7%) | 350 (33.9%) | 560 (32.1%) | |
| 11–39 | 111, 36.6%) | 121 (29.4%) | 189 (18.3%) | 421 (24.1%) | |
| >=40 | 33 (10.9%) | 38 (9.2%) | 84 (8.1%) | 155 (8.9%) | |
| Rurality | | | | | <0.001 |
| Rural/Small Town | 27 (8.7%) | 62 (14.8%) | 41 (3.9%) | 130 (7.3%) | |
| Micropolitan | 17 (5.5%) | 54 (12.9%) | 59 (5.6%) | 130 (7.3%) | |
| Metropolitan | 265 (85.8%) | 304 (72.4%) | 947 (90.4%) | 1516 (85.4%) | |
| Ownership | | | | | <0.001 |
| Hospital/Health System Owned | 135 (43.8%) | 282 (67.1%) | 476 (45.5%) | 893 (50.3%) | |
| Independent | 173 (56.2%) | 138 (32.9%) | 570 (54.5%) | 881 (49.7%) | |
| IPA Membership | | | | | 0.264 |
| Yes | 69 (22.9%) | 84 (20.2%) | 250 (24.2%) | 403 (23.0%) | |
| No | 232 (77.1%) | 332 (79.8%) | 784 (75.8%) | 1348 (77.0%) | |
| Practice Type | | | | | <0.001 |
| Primary care | 180 (60.4%) | 286 (70.8%) | 765 (75.5%) | 1231 (71.8%) | |
| Multispecialty | 118 (39.6%) | 118 (29.2%) | 248 (24.5%) | 484 (28.2%) | |
| Practice availability of Advanced Practice Practitioners (APPs) | | | | | <0.001 |
| High availability (top quartile; at least 40% of clinic providers are APPs) | 115 (38.1%) | 113 (27.4%) | 206 (20.1%) | 434 (24.9%) | |
| Low availability | 187 (61.9%) | 299 (72.6%) | 821 (79.9%) | 1307 (75.1%) | |
| Market (HRR) Level: Proportion of primary care providers in a hospital/ health system-owned practice | 55.9% | 58.1% | 55.1% | 56.0% | 0.00 ^a |
| Practices reporting <i>any</i> capabilities within designated HIT domain | | | | | |
| Information Exchange | 171 (55.3%) | 257 (61.2%) | 676 (64.6%) | 1104 (62.2%) | 0.012 |
| Patient Access/Engagement | 290 (93.9%) | 397 (94.5%) | 987 (94.3%) | 1674 (94.3%) | 0.928 |
| EHR Decision Tools | 249 (80.6%) | 321 (76.4%) | 774 (73.9%) | 1344 (75.7%) | 0.052 |
| Registries | 254 (82.2%) | 318 (75.7%) | 759 (72.5%) | 1331 (74.9%) | 0.002 |

Note.

* $P < .05$ ** $P < .01$ *** $P < .001$; unweighted categorical relationships assessed using Pearson's chi-squared test unless otherwise noted^a = F-statistic reported

Table 2.

Logistic Multivariate Analyses – Practice-level Predictors of Advanced Health IT Capabilities

| | Information Exchange OR (95%CI) N=1158 | Patient Engagement OR (95%CI) N=1158 | Decision support OR (95%CI) N=1116 | Registries OR (95%CI) N=1110 |
|---|---|---|---|---|
| FQHC/Safety Net Status (<i>Reference: Non-Safety Net</i>) | | | | |
| FQHC | 0.52 (0.34, 0.81)*** | 1.14 (0.79, 1.66) | 1.06 (0.72, 1.54) | 1.21 (0.80, 1.84) |
| Other Safety Net/Not FQHC | 0.66 (0.46, 0.95)* | 1.34 (0.96, 1.88) | 1.09 (0.77, 1.54) | 0.92 (0.63, 1.33) |
| Total Providers (<i>Reference: <=5</i>) | | | | |
| 6–10 | 1.04 (0.72, 1.50) | 0.92 (0.66, 1.29) | 0.83 (0.60, 1.16) | 0.81 (0.54, 1.23) |
| 11–39 | 1.41 (0.90, 2.22) | 0.83 (0.55, 1.24) | 0.97 (0.65, 1.47) | 0.98 (0.62, 1.54) |
| >=40 | 1.67 (0.94, 2.99) | 0.77 (0.45, 1.31) | 0.48 (0.28, 0.84)* | 0.76 (0.43, 1.36) |
| Practices That Are Exclusively Primary Care (<i>Reference: Multispecialty</i>) | 0.97 (0.66, 1.41) | 0.99 (0.71, 1.37) | 0.82 (0.59, 1.16) | 0.79 (0.55, 1.13) |
| Practices with Highest % Advanced Practitioners of Total Providers, Top Quartile (<i>Reference: Not top quartile</i>) | 0.83 (0.55, 1.24) | 0.91 (0.66, 1.26) | 1.09 (0.78, 1.54) | 1.25 (0.84, 1.85) |
| Rurality (<i>Reference: Metropolitan</i>) | | | | |
| Rural/Small Town | 1.26 (0.72, 2.21) | 0.49 (0.28, 0.86)* | 0.69 (0.40, 1.19) | 0.67 (0.36, 1.24) |
| Micropolitan | 1.04 (0.56, 1.94) | 1.09 (0.62, 1.91) | 0.77 (0.43, 1.39) | 0.77 (0.40, 1.47) |
| IPA Membership (<i>Reference: Not in an IPA</i>) | 1.27 (0.83, 1.93) | 0.98 (0.68, 1.42) | 1.44 (0.98, 2.11) | 1.28 (0.87, 1.89) |
| Hospital/Health System Owned (<i>Reference: Independent</i>) | 1.21 (0.86, 1.71) | 1.35 (0.91, 1.89) | 0.78 (0.56, 1.10) | 0.66 (0.47, 0.93)* |
| Market (HRR) Level: Proportion of market-level primary care providers in a hospital/health system-owned practice (rescaled 1 to 10) | 1.13 (1.00, 1.27) | 1.03 (0.93, 1.14) | 0.97 (0.87, 1.09) | 0.99 (0.87, 1.11) |
| Model Statistics | | | | |
| <i>F</i> | 1.85* | 1.29 | 1.57 | 1.80* |

Note:

* P<.05

** P<.01

*** P<.001; estimates weighted to account for sampling and non-response