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## The Direct Clinic-Level Cost of the Implementation and Use of a Protocol to Assess and Address Social Needs in Diverse Community Health Center Primary Care Clinical Settings

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### Abstract

**Purpose.**—Social determinants of health, including food insecurity, housing instability, social isolation, and unemployment are important drivers of health outcomes and utilization. To inform implementation of social needs screening and response protocols, there is a need to identify the associated costs in routine primary care encounters.

**Methods.**—We interviewed key stakeholders in four diverse community health centers that had adopted a widely used social needs screening and response protocol. We evaluated costs using an activity-based costing tool across both the initial implementation phase and ongoing maintenance phase.

**Results.**—Clinic costs were associated with workforce development, planning, and electronic health record integration. These initial implementation costs varied by site (\$6,644–\$ 49,087). On a per-patient basis, ongoing maintenance costs ranged from \$9.76 to \$47.98.

**Conclusion.**—Our findings can aid in designing reimbursement mechanisms tied to social needs screening and response to accelerate translational efforts and promote health equity.

### Keywords

Social needs; primary care; social determinants of health; care redesign; activity-based costing

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Social determinants of health (SDOH)—defined as the conditions in which people are born, live, learn, work, play, worship, and age—affect a wide range of health indicators, as well as quality of life and clinical risk for disease.<sup>1–3</sup> Increasing evidence suggests that addressing the consequences of SDOH, including individual-level social needs, such as housing instability, social isolation, or food insecurity can improve health<sup>4–6</sup> and reduce health care expenditures.<sup>7–9</sup> Successful efforts to increase value and promote prevention will require health systems to assess and address social needs in routine outpatient clinical encounters. Recent federal and state efforts have focused on collecting social needs data useful in addressing drivers of health status and health care utilization as well as mitigating health disparities.<sup>10–13</sup> To improve patient outcomes, providers and health care systems must be able to use these data. For example, providers may use information on patients' social needs through screening to inform care-planning and to form relationships with community-based organizations (CBOs) to better respond to patient social and economic needs.

Community health centers, particularly federally qualified health centers (FQHCs), serve a predominantly low-income patient population and have long worked to be responsive to their social context and to non-medical needs. However, only recently have they implemented systematic approaches for collecting SDOH data and addressing social needs.<sup>14</sup> Historically, social needs screening and response has often been focused on specific populations of interest (e.g., children or women) and a specific area of social need (e.g., interpersonal violence). However, clinical practice has increasingly incorporated universal, standardized screening and response protocols across a range of health-related social needs.<sup>15</sup> Among the most prominent examples of a standardized approach to social needs screening and response is The Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE). The PRAPARE was developed by the National Association of Community Health Centers (NACHC), the Association of Asian Pacific Community Health Organizations, the Oregon Primary Care Association, and the Institute for Alternative Futures as part of a national effort to help community health centers collect the data needed to better understand the SDOH drivers of poor health outcomes and higher health-related costs.<sup>16</sup> The PRAPARE is a standardized patient social need risk assessment tool, as well as a process for addressing identified needs at the individual and population levels.<sup>17</sup>

Despite growing interest in using PRAPARE and other standardized approaches, the cost of screening and responding to patients' social needs for a clinic remains poorly understood. Our objective was to estimate the direct costs of implementing and maintaining

PRAPARE in primary care clinics across four community health centers. Because cost is a critical consideration for implementation into routine clinical encounters, we anticipate that our findings will provide useful information for clinic leaders considering adoption of PRAPARE and other social needs screening and response protocols.

## Methods

### Practice selection.

We used purposive sampling to recruit FQHCs that had screened and responded to social needs for at least two years prior to June 2019. We invited four FQHCs recommended by the North Carolina Community Health Center Association based on their size and geographic location to participate. For each FQHC, we obtained information on patient volume, total number of full-time equivalent employees (FTEs), geographic location, staffing, and payer mix from publicly available resources, including the FQHC website and the 2019 Health Resources & Services Administration's Uniform Data System (Table 1). The study protocol was reviewed and approved by the Institutional Review Board of the University of North Carolina at Chapel Hill.

### Data collection.

We conducted semi-structured telephone interviews with representatives from the four FQHCs between July 2019 and January 2020: (1) to identify clinical activities and implementation processes to build organizational capacity (e.g., designing workflows, electronic health (EHR) documentation processes, workforce development) and (2) to estimate costs using activity-based costing. Specifically, we spoke with clinical champions, administrators, and front line staff involved in developing and delivering PRAPARE at each FQHC as follows:

- FQHC A: Chief Medical Officer, a behavioral health case manager, and a nursing informatics specialist.
- FQHC B: Director of Population Health who queried primary care and behavioral health providers for additional clinical perspective.
- FQHC C: Director of Care Management.
- FQHC D: A registered nurse care manager.

These key stakeholders were invited to participate based on their first hand account of PRAPARE implementation and/or delivery and ability to provide a comprehensive description of relevant activities, organizational capacity and context, roles, and responsibilities. We also asked about PRAPARE implementation and delivery, barriers and facilitators, and practice patterns across multiple members of the care team. We used an iterative process with follow-up interviews and electronic messages to clarify and validate responses; each initial interview took between two and four hours with subsequent follow-up interviews lasting between 30 minutes and two hours to verify responses for populating the site-specific activity-based costing tool described below.

To estimate costs, we identified specific activities, inputs, and workflows associated with PRAPARE's initial implementation and ongoing maintenance (Box 1). The implementation of novel approaches to care and related technologies is not a straightforward process. It involves a dynamic, iterative process to ensure workflows and technology are aligned.<sup>18</sup> We based our definition of the implementation phase on existing theory and identified related activities.<sup>19</sup> The PRAPARE implementation phase was comprised of organizational capacity-building activities including initial investments such as creating a structured documentation flowsheet in the EHR and training for staff and clinicians administering the assessment. The implementation phase also consisted of activities planning and design processes that were based on iterative field testing (screening tool customization, constructing a directory of accurate patient-facing referral information of CBOs, and social services to respond to identified social needs). Maintenance-related activities included ongoing (primarily clinical) activities associated with delivering PRAPARE as standard of care for all patients or a medically complex subset of the patient population. This included screening and CBO referrals, EHR documentation, reporting, and case management activities associated with addressing social needs as a part of care planning. Additional detail on PRAPARE implementation and maintenance-related activities for a participating site are published elsewhere.<sup>20</sup>

#### **Activity-based cost estimation.**

Using data from our interviews, we designed and populated a practice-level costing tool in Microsoft EXCEL<sup>®</sup> based on instruments used in similar primary care-based studies.<sup>21,22</sup> The practice-level costing tool was used to capture all PRAPARE activities and their associated inputs; it was designed to be completed collaboratively with site-specific informants during the previously described interviews. We used activity-based costing, a micro-costing technique, to evaluate direct clinic-level costs. Activity-based costing is ideal for retrospectively assessing clinic-level costs of primary care transformation for a single practice or a small group of practices.<sup>21</sup> The costing tool was tested with one practice (FQHC A) and refined based on site and stakeholder feedback before use in the field across all participating sites. We examined both personnel and non-personnel costs that were both new and directly attributable to PRAPARE. Personnel costs encompassed the time required for activities (measured in minutes), including but not limited to, creating new procedures and practice patterns, data-reporting, screening for social needs, referring patients to appropriate community resources or social services, and providing ongoing case management. Wages were estimated using the median national occupational labor pay rates in the 2019 U.S. Bureau of Labor Statistics (BLS), with a fringe benefit rate of 31% based on the most recent monthly BLS report on private industry employee compensation by industry grouping (e.g., health care and social assistance series).<sup>23,24</sup> Non-personnel costs included office supplies, technology, and software required for PRAPARE planning, measurement, or analysis functions. For non-personnel costs, we collected information on direct expenditures for activities (e.g., office supplies and EHR flowsheet templates) and any allocation of existing resources devoted to PRAPARE (e.g., training and workforce development). The practice-level costing tool generated estimates based on both fixed and variable (i.e., based on patient volume) expense types. We collected the volume of patients screened and the proportion of patients who screened positive for social needs

from administrative records, EHR-generated reports (when available), and/ or stakeholder estimates. Key informants provided estimates of the proportion of patients offered ongoing case management. We assessed unit cost at the patient level and clinical FTE for each activity type or cost element (e.g., PRAPARE screening activities). By estimating the resources used for each unit across activities/ elements, we could calculate the total resources used for PRAPARE by multiplying the unit cost by the amount of resources used for each element or activity. For ease of interpretation and comparisons across participating sites, costs are expressed as a total cost and by two unit costs of interest: annual cost per clinical FTE for fixed expenses and per patient for variable expenses, both overall and by elements/ activities.

## Results

The four participating FQHCs varied in size, geographic location, and payer mix (Box 1). Each had an EHR system and either designed a flowsheet for the PRAPARE assessment tool or used an existing template offered by the EHR vendor. The number of total clinical FTEs ranged from 10.1 to 83, but only half of the FQHCs had dedicated clinical informatics personnel. All except FQHC D selectively screened patients who had greater medical complexity or had a behavioral health referral. FQHC D embedded social needs screening and response into all new patient intake visits and updated the PRAPARE responses annually.

### Implementation costs.

We found significant variation among estimates of the direct costs from the four FQHCs, with the largest cost driver being personnel. Implementation costs, which were largely associated with capacity building, ranged from \$6,644 to \$49,087 (Table 2). One contributor to cost variation was the level of EHR flowsheet design and customization. NACHC encourages health systems to customize the PRAPARE screening assessment tool with a combination of core and optional measures based on their patient population. Individual FQHCs either created custom EHR flowsheets or, when available from the EHR vendor, imported an existing template. Activities associated with EHR integration averaged ranged from \$537 to \$22,361 across the participating sites. FQHC C's cost EHR integration costs were the highest due to extensive testing, quality assurance of automated reports, and quality improvement cycles to revise the flowsheet based on clinician and leadership feedback. Training and workforce development cost estimation was limited to skill-building directly associated with PRAPARE activities, which included training to screen for social needs in clinical settings and workshops, seminars, or conferences for identifying local strategies and resources for responding to social needs. We found that although workforce development activities are commonly associated with implementation,<sup>25</sup> sites reported significant investment throughout the maintenance phase in continuous training to develop evidence-based clinical skills associated with addressing unmet social needs and to use the social needs assessment data for population-health management activities and data-reporting. The resources associated with the identification of community resources and the development of referral pathways for patients with unmet social needs varied based on organizational experience with engaging with patients around their social needs prior to

PRAPARE and the availability and capacity of community-based organizations or social services.

### **Maintenance costs.**

We found large variation in estimated maintenance costs attributable to variation in patient volume (Table 3). PRAPARE screening and referral inputs varied based on the proportion of patients with identified social needs and the intensity (time) of the response. Overall, sites were limited in the amount of ongoing case management that they could provide to patients to resolve CBO referrals.

Cost estimates were higher for clinics with a greater proportion of patients screening positive for social needs and/or offering ongoing case management. Across sites, case management focused on ensuring successful submission of an application or receipt of services. This occurred via telephonic follow-up or at subsequent clinical encounters. For example, FQHC C embedded case management or follow-up activities as a component of Medicare chronic-care management visits as part of an effort to promote self-management goals. On the other hand, FQHC B used a community health worker for case management activities to ensure a referral was resolved and services obtained. Case management intensity varied based on administrative burden associated with accessing a resource, complexity and vulnerability of the patient, and clinic capacity based on staffing and resource constraints. Process and workflow design contributed to the proportion of patients identified with a social need as well as the intensity of the screening and response. For example, FQHC B included additional items in their social needs screening instrument, which may account for the high rate (81%) of patients identified as having a social need. Another participant, FQHC D, used a patient self-screening process, which resulted in lower costs associated with screening and response activities. Another significant driver of cost was the composition of the care team. Two participants, FQHCs A and C, only included providers in ongoing population health management meetings and quality improvement initiatives with care managers, nurses, and social workers primarily responsible for screening and response activities. In contrast, FQHC B and D had both primary care providers and physician champions involved in activities related to the referral response as part of care-planning. An expanded role for physician champions or advanced practice providers in these activities resulted in higher direct costs. Similarly, ongoing activities related to data-reporting, analysis, planning, and quality improvement varied based on level of leadership and clinician engagement. On a per patient basis, annual direct costs for PRAPARE ranged widely from \$9.76 to \$47.98.

### **Discussion**

Many primary care practices are adopting protocols to screen for and address patients' social needs. However, the cost of doing so within a practice is not known. We sought to estimate the clinic-level costs associated with implementing and maintaining such a protocol, PRAPARE, in four FQHCs. The drivers of variation on which we focused were the volume of patients screened, proportion of screened patients with an identified social need, and intensity of the intervention required to respond to identified social needs. The heterogeneity we found in the proportions of patients who screened positive for a social need

(10% to 81%) is consistent with findings from other studies,<sup>5</sup> and is likely due to varying levels of social risk and contextual factors. For example, a customized social needs screening tool that includes optional domains based on risks or social adversity commonly experienced by the patients served may result in identifying more social needs.

Our findings suggest that there may be EHR-integration strategies that could lower clinic implementation expenditures. Interviews with key stakeholders revealed a spectrum of EHR-integration planning activities. On the less resource-intensive end, the smallest FQHCs (B and D) used an existing social needs flowsheet template from their EHR vendors with little customization. The largest FQHC (C) involved multiple levels of leadership and clinical personnel input to customize the EHR flowsheet to match priorities for data-reporting and an iterative testing process before widespread use across all providers. These findings complement existing literature that describes a number of considerations and tradeoffs related to designing and implementing processes for EHR documentation of social needs assessments.<sup>26</sup>

Our cost estimates may inform the design of social needs screening and response protocols. We found that the design of the PRAPARE assessment at FQHC B may have influenced the rate of social needs identification. The trade-offs between a lengthier versus abbreviated social needs assessment are based on level of tailoring to the community being served while maintaining core, standardized measures to enable meaningful cross-site comparisons and risk adjustment. To promote reach, assessment administration could be preceded by an abbreviated social needs assessment that triggers use of a comprehensive assessment when a need is identified (as is the case with screening for depression).<sup>27</sup> Additional research is required to understand the potential for cost-effectively scaling PRAPARE and protocols like it by triaging patients and focusing resources on high-risk patients and families. Emerging technologies to facilitate medical care and social care integration could reduce both implementation and maintenance costs.<sup>28–30</sup> Workforce considerations could also affect the value proposition for offering robust social need responses. Across the four FQHCs in this study, we found significant variation in the personnel involved with screening and responding to patients' social needs (e.g., registered nurses, nursing assistants, community health workers, social workers, and physicians). The providers' role varied significantly across the FQHCs from little involvement (FQHCs A and C) to an expanded role in which providers actively incorporate social needs responses into care-planning (FQHC B and D). We found that the varying role of providers was related to heterogeneous practice patterns across clinics. Our findings suggest that integration of the provider requires a streamlined approach involving other members of the health care team and provider training to engage with patients on their social needs in a collaborative way. Our findings underscore a common finding emerging in the literature: clinical social needs responses often involve a multidisciplinary, team-based approach.<sup>31</sup> This has motivated expanding the role of community health workers, community resource navigators, or trained volunteers to include screening and case management activities across the social and medical care continuum.<sup>32,33</sup> This is especially important for small and/or free clinics that have average annual operating budgets of less than \$300,000,<sup>34</sup> where initial costs associated with clinic capacity may represent a significant barrier to implementation.

Our study has several limitations. The small number of FHQCs in one state limits generalizability to other FQHCs and clinical settings (e.g., inpatient, emergency department). Since clinics varied in size, our study does not allow for a single generalizable estimate for implementation for other health systems. Additionally, we relied on self-report to estimate time, which is vulnerable to bias. Finally, we did not consider indirect costs (space, utilities, administrative overhead) or direct costs for related initiatives (voter registration, health insurance marketplace navigation) that were not exclusively attributable to social needs screening and response clinical workflows; thus, the actual total cost associated with implementation and maintenance is higher.

Despite these limitations, we are the first to quantify direct clinic-level costs of a program to screen and respond to patients' social needs. Our findings offer insights into workable strategies for a tailored response and cost efficiencies, especially for primary care clinicians and administrators who seek to respond to their patients' social needs and other non-medical drivers of health.<sup>35-37</sup> The cost-effective implementation of protocols to respond to social needs, especially for medically and socioeconomically vulnerable populations, could have important implications for value-based payment models that reward population-level health improvements.<sup>38</sup> To this end, health care systems should understand the emerging business case for offering social interventions to vulnerable communities.<sup>39</sup> Furthermore, policymakers and payers could consider introducing reimbursement mechanisms tied to social needs screening and response encounters to accelerate translational efforts<sup>40</sup> with the potential to improve health outcomes and reduce disparities. Emerging research provides preliminary evidence of cost-savings associated with addressing social needs that may make these interventions viable in value-based financing systems where health systems are eligible for shared savings, quality incentives, or penalty avoidance.<sup>40-42</sup>

There are several priority areas for future research to build off our work. First, we need to better understand the drivers of social needs identification rates. Our findings suggest they could be due to the characteristics of the communities served, the design of the assessment itself, and the method by which the social needs are assessed (in-person, online, or self-screening by paper). Second, research is required to identify potential cost efficiencies associated with integrating technology into social needs screening and response interventions. We found high levels of variable personnel costs that limit the potential for economies of scale; however, emerging approaches have embraced web-or text-based assessment or follow-up.<sup>29,30</sup> These technologies come with potential to efficiently scale social needs screening and response protocols in an accessible and patient-centric manner. Third, research is required to develop an optimized approach to EHR integration that balances cost and implementation considerations<sup>43,44</sup> with effective population health management.<sup>45</sup> Fourth, we found that most PRAPARE activities were being conducted by nurses, physicians, and, when available, clinical social workers. Additional research is required to identify best practices for staffing social needs response and workforce development strategies to maximize existing personnel's scope of practice to incorporate PRAPARE or similar practice patterns. Finally, additional research is needed to understand the design of social needs assessment and response interventions that most effectively improve health outcomes and reduce utilization. Early evidence suggests that medical-legal partnerships and focused efforts to support homeless people with severe mental illness and



pediatric populations are areas of particular promise.<sup>5</sup> Based on this existing literature, an important consideration is assessment design including length and the extent to which items are tailored for a specific population of interest (for example, offering a tailored social needs screening assessment to patients with the highest utilization or especially vulnerable communities).

As the evidence base for these approaches grows, identifying the core components of cost-effective screening and response interventions across screening, referral, and case management activities will be critical.

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**Box 1.**

**DESCRIPTION OF IMPLEMENTATION AND MAINTENANCE PHASE ACTIVITIES**

Phase	Activity	Description	Associated Personnel	Exemplar Activities
Implementation	Planning & workflow design	Meetings with leadership, clinical informatics, and behavioral health integration to design patient-centered clinical workflows and embed screening and response protocols within existing quality improvement and population health management initiatives.	<ul style="list-style-type: none"> <li>• Nursing (RN)</li> <li>• Medical provider</li> <li>• Healthcare social workers (MSW)</li> <li>• Health information technician</li> <li>• Leadership</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying priority patient populations for engagement.</li> <li>• Designing delivery and clinical workflows via regular quality improvement cycles.</li> <li>• Identifying and preparing clinical champions and clinician implementation teams.</li> <li>• Assessing for readiness by identifying implementation barriers and facilitators.</li> </ul>
	Workforce development *	Training and workforce development activities ranging from EHR documentation for quality assurance to best practices for engaging patients around social needs. This includes skill building in motivational interviewing, reflective listening, shared decision-making, and empathic communication techniques to discuss potentially sensitive non-medical dimensions of health.	<ul style="list-style-type: none"> <li>• Nursing (CNA, LPN, and RN)</li> <li>• Medical provider</li> <li>• Healthcare social worker</li> <li>• Health information technician</li> <li>• Leadership</li> </ul>	<ul style="list-style-type: none"> <li>• Attending clinical conferences and webinars related to social needs screening and response</li> <li>• Continued medical education related to evidence based strategies for engaging with patients</li> <li>• Continued professional development for leveraging social needs assessment data for population health management, grant writing, and advocacy.</li> </ul>
	EHR integration	Creation and customization of an EHR flowsheet template. This also includes quality assurance activities and troubleshooting. EHR integration implementation activities are designed to ensure that members of patients' care teams can access data on social needs to inform	<ul style="list-style-type: none"> <li>• Nursing (RN)</li> <li>• Medical provider</li> <li>• Health information technician</li> <li>• Leadership</li> </ul>	<ul style="list-style-type: none"> <li>• Designing EHR data entry fields through iterative testing and quality assurance.</li> <li>• Importing pre-existing SDOH template from EHR vendor.</li> <li>• Iterative auditing and providing feedback through testing cycles.</li> </ul>

Phase	Activity	Description	Associated Personnel	Exemplar Activities
		care planning and generate customizable reports.		
Implementation	CBO directory development and updates*	The result of these activities is the compilation of an up-to-date and curated directory of community resources and social services that patients may qualify for. This includes coordination and communication with local agencies and CBOs to confirm relevant details for referrals including capacity, eligibility requirements, and hours of operation.	<ul style="list-style-type: none"> <li>• Nursing (CNA)</li> <li>• Healthcare social workers (MSW and LCSW)</li> <li>• CHW</li> </ul>	<ul style="list-style-type: none"> <li>• Accessing information on local health and human services.</li> <li>• Compiling contact information for CBOs.</li> <li>• Establishing formal or informal partnerships with CBOs to establish referral pathways through community meetings, county health department initiatives, and internal meetings.</li> <li>• Updating to directory of relevant resources and CBOs as a result of regular or semi-regular community scans.</li> </ul>
Maintenance	Social needs screening	Effort and resource inputs associated with clinical activities to administer the social needs screening tool during or before a visit. This also includes effort or resources associated with social need and referral documentation on paper and/or in the patient EHR.	<ul style="list-style-type: none"> <li>• Nursing (CNA, LPN, and RN)</li> <li>• Medical provider</li> <li>• Healthcare social workers (MSW and LCSW)</li> </ul>	<ul style="list-style-type: none"> <li>• Patient self-administers social needs screening as an element of patient in-take</li> <li>• Social needs screening administration by a member of the health care team via interview to a patient population of interest (e.g., post-partum women or patients that receive a behavioral health referral).</li> <li>• Data entry of social needs assessment responses into the patients' EHR. This includes patients with no identified social needs and referrals offered.</li> </ul>
	CBO referrals	Activities and clinical effort to refer patients to CBOs or social services based on needs identified through screening. This ranges from providing information on relevant resources to assisting with	<ul style="list-style-type: none"> <li>• Nursing (CNA, LPN, and RN)</li> <li>• Healthcare social workers (MSW and LCSW)</li> </ul>	<ul style="list-style-type: none"> <li>• Behavioral health case manager refers patient to social service agency or CBO based on eligibility and unmet social need. Information is provided to the patient via a handout with</li> </ul>

Phase	Activity	Description	Associated Personnel	Exemplar Activities
		making initial contact. These activities are only completed for patients with identified needs.		information on contacting, applying, hours, and/or eligibility requirements. <ul style="list-style-type: none"> <li>• If unmet social need is associated with affording medication, RN makes a specialized referral for a medication assistance program.</li> <li>• If referral resource is available within the health center, a warm hand-off is made.</li> </ul>
Maintenance	Case management	Activities that apply for a subset of complex patients that require ongoing case management to resolve CBO referral(s). This includes regular follow-up on unmet social needs at subsequent visits or additional telephonic case management.	<ul style="list-style-type: none"> <li>• Nursing (CNA, LPN, and RN)</li> <li>• Medical providers</li> <li>• Healthcare social workers (MSW and LCSW)</li> <li>• CHW</li> </ul>	<ul style="list-style-type: none"> <li>• Follow-up on referrals as part of Medicare chronic care management visits to promote self-management goals.</li> <li>• CHW telephonic outreach for case management activities.</li> </ul>
	Data reporting, analysis & quality improvement	Activities involving personnel effort or technologies associated with generating reports using social needs assessment and referral data for strategic planning, workflow design, and population health management or quality improvement initiatives.	<ul style="list-style-type: none"> <li>• Nursing (RN)</li> <li>• Medical provider</li> <li>• Healthcare social worker</li> <li>• Health information technician</li> <li>• Leadership</li> </ul>	<ul style="list-style-type: none"> <li>• Monthly project team meetings to plan or execute quality improvement activities (e.g., modifying practice patterns).</li> <li>• Generating reports using social needs assessment data to present at provider huddles, for leadership, or for Uniform Data System reporting requirements.</li> <li>• Presenting data on transportation-related social needs for a monthly coalition meeting with CBOs and community stakeholders</li> </ul>

Note:

\* Activities consist of one-time capacity building and ongoing clinical activities spanning both implementation and maintenance phases

CBO = Community based organization

EHR = Electronic health record  
RN = Registered nurse  
LPN = Licensed practical nurse  
MSW = Master of social work  
LCSW = Licensed clinical social worker  
CHW = Community health worker  
CNA = Certified nursing assistant

**Table 1.****DESCRIPTION OF PARTICIPATING FQHC CHARACTERISTICS**

<b>Characteristics</b>	<b>FQHC A</b>	<b>FQHC B</b>	<b>FQHC C</b>	<b>FQHC D</b>
Community type <sup>a</sup>	Urban	Rural	Suburban	Rural
Year founded	1971	2001	1970	1981
Medical specialties	FM, IM, P	FM, IM, P	FM, IM, P	FM
Total Clinician FTEs	69	41	83	10.1
Informatics specialist (Y/ N)	Y	N	Y	N
EHR (Y/ N)	Y	Y	Y	Y
Patient volume <sup>b</sup>	36,361	16,104	49,101	2,174
% children (<18 yrs) <sup>b</sup>	26.26%	12.56%	30.12%	20.24%
% racial or ethnic minority <sup>b</sup>	92.52%	60.29%	75.14%	25.89%
Uninsured (as % of payer mix) <sup>b</sup>	56.79%	12.98%	53.13%	26.03%
% below 200% of FPL <sup>c</sup>	97.11%	84.81%	98.90%	61.99%
PRAPARE/ month <sup>d</sup>	68	66	~125	~100

Note:

IM= internal medicine

FM= family medicine

P= pediatrics

EHR= electronic health record

FTE= full-time equivalent

FPL= federal poverty limit

<sup>a</sup>Community type: rural = <25,000 population; suburban = 25,000–150,000; urban = >150,000

<sup>b</sup>Total patient according to Uniform Data Systems 2019 reporting period

<sup>c</sup>Of patients with known income

<sup>d</sup>PRAPARE monthly patient volume reported by site



**Table 2.****DIRECT CLINICAL COST ESTIMATES FOR IMPLEMENTATION PHASE BY ACTIVITY CATEGORY**

<b>Direct Clinic Costs by Activity Categories</b>						
	<b>Annual patient volume*</b>	<b>Planning &amp; workflow design (\$/FTE)</b>	<b>Workforce development (\$/FTE)</b>	<b>EHR integration (\$/FTE)</b>	<b>CBO directory development (\$/FTE)</b>	<b>Total (\$/FTE)</b>
FQHC A	36,361	\$4,969 (\$72.01)	—	\$4,028 (\$58.38)	\$894 (\$5.41)	\$10,391 (\$150.59)
FQHC B	16,104	\$7,616 (\$185.77)	\$269 (\$6.55)	\$537 (\$13.10)	\$358 (\$8.72)	\$9,280 (\$226.33)
FQHC C	49,101	\$16,517 (\$199.00)	\$6,864 (\$82.70)	\$22,361 (\$269.41)	\$2,145 (\$25.84)	\$49,087 (\$591.41)
	2,714	\$4,848 (\$479.55)	—	\$923 (\$89.44)	\$374 (\$36.99)	\$6,644 (\$657.86)

Note:

\* Total annual unique patient volume for participating FQHCs according to the Health Resource and Service Administration's Uniform Data System

FQHC = federally qualified health center

CBO = community based organization

FTE= Full-time equivalent

\$/FTE = Annual cost per clinical full-time equivalent

**Table 3.** DIRECT CLINICAL COST ESTIMATES FOR IMPLEMENTATION PHASE BY ACTIVITY CATEGORY

Direct Clinic Costs by Activity Categories									
	Annual patient volume*	% Social needs identified	Social needs screening (\$/pt)	CBO referral (\$/pt)	Case management (\$/pt)	Workforce development (\$/FTE)	CBO directory updates (\$/FTE)	Data reporting, analysis & QI (\$/FTE)	Total (\$/pt)
FQHC A	36,361	43	\$4,860 (\$5.96)	\$6,271 (\$7.69)	\$4,375 (\$5.36)	\$3,217 (\$46.63)	\$358 (\$5.18)	\$8,896 (\$128.93)	\$31,236 (\$38.28)
FQHC B	16,104	81	\$3,699 (\$4.67)	\$13,183 (\$16.65)	\$3,185 (\$4.02)	\$6,574 (\$160.33)	\$429 (\$10.46)	\$9,934 (\$242.30)	\$38,004 (\$47.98)
FQHC C	49,101	50	\$13,406 (\$8.94)	\$10,993 (\$7.33)	\$3,574 (\$2.38)	\$9,586.68 (\$115.50)	\$715 (\$8.61)	\$4,313 (\$50.67)	\$40,032 (\$28.65)
FQHC D	2,174	10	\$187 (\$0.16)	\$3,924 (\$3.27)	\$1,385 (\$1.15)	\$1,110 (\$109.91)	\$448 (\$44.39)	\$4,155 (\$411.40)	\$11,710 (\$9.76)

Note:

\* Total annual unique patient volume for participating FQHCs according to the Health Resource and Service Administration's Uniform Data System

FQHC = federally qualified health center

CBO = community based organization

FTE= Full-time equivalent

\$/FTE = Cost per clinical full-time equivalent

\$/pt = Cost per patient based on site-specific estimates of total number of PRAPARE administered over the 1-year maintenance period