



“Increasing Warm Handoffs: Optimizing Community Based Referrals in Primary Care Using QI Methodology”

Dana Sanderson^{1,2} , Sandra Braganza¹, Kaitlyn Philips¹,
 Tashi Chodon³, Renee Whiskey³, Patrizia Bernard³,
 Andrea Rich^{1,2}, and Kevin Fiori¹ 

Abstract

Social and environmental factors have an outsized effect on one’s health. Children are particularly impacted by the adverse effects of poverty. While social determinants of health (SDH) screening in healthcare settings has proliferated there remain gaps in best practices for screening processes. As research has shown that patient navigation leads to an improvement in unmet social needs and family-reported child health, warm handoffs may be a key factor in assuring that the social needs of families are effectively addressed. Using quality improvement (QI) methods our pediatric clinic worked to increase the warm handoff rate between Community Health Workers (CHWs) and patients with unmet social needs. CHW warm handoff rates increased two-fold over the intervention period. Our results illustrate that QI methods can be used to optimize workflows to increase warm handoffs with CHWs. This is important as health centers work to improve their social needs screening and referral programs.

Keywords

community health, pediatrics, primary care, quality improvement, underserved communities

Dates received: 8 January 2021; revised: 17 May 2021; accepted: 18 May 2021.

Introduction

Social and environment factors and personal behavior patterns account for more than half of the impact on one’s health outcomes.¹ Children are particularly susceptible to the adverse health consequences of poverty. 16% of children under 18 years old live in poverty which represents more than 30% of impoverished Americans, the largest such group.² Child poverty is associated with an increase in obesity, asthma, infant mortality and teen pregnancies, as well as with poorer developmental and educational outcomes compared to economically advantaged children.³ Subsequently, social determinants of health (SDH) screening efforts in healthcare settings have proliferated over the past many years to respond to the need to mitigate social risk factors. The American Academy of Pediatrics (AAP) provides practice-based recommendations for the psychosocial care of children including screening for unmet social needs. While studies have shown that routine social risk screening increases the uptake of social services, specific

best practices regarding systematic screening and conducting referrals remain nebulous.⁴

Community health workers (CHWs) are particularly well positioned to link patients with unmet social needs to community resources. CHWs have been important and effective public health agents for decades throughout the world.⁵ Emphasizing disease prevention by reducing socioeconomic, educational, and cultural barriers to care, CHWs have impacted health outcomes related to asthma, screening behaviors for certain cancers, and HIV in some populations.^{5,6}

¹Albert Einstein College of Medicine, Bronx, NY, USA

²Montefiore Medical Group, Bronx, NY, USA

³Bronx Community Health Network, Bronx, NY, USA

Corresponding Author:

Dana Sanderson, Department of Family and Social Medicine, Montefiore Medical Center, Albert Einstein College of Medicine, 3544 Jerome Avenue, Bronx NY 10467, USA.
 Email: dsanders@montefiore.org



Warm handoffs, as defined by the Agency for Healthcare Research and Quality (AHRQ), are transfers of care between members of a healthcare team that occur in front of the patient.⁷ Warm handoffs or in-person navigation have been used in many domains of patient care in a wide variety of settings, including for behavioral health treatment and in successful social needs screening and referral programs.⁸⁻¹⁰ Adding warm referrals with behavioral health workers in a study involving pediatric and adolescent medicine patients increased first appointment show rates with the mental health team.⁹ Notably, studies have also shown a decrease in social needs as well as a self-reported improvement in child health after low-income families were provided with in-person social service referral navigation.⁸

Our aim was to increase the warm handoff rate between patients with unmet social needs requesting assistance and CHWs to 50% of families referred by December 2019 at 1 pediatric practice using Quality Improvement (QI) methods.

Methods

Setting

This study took place at an academic affiliated federally qualified health center (FQHC) located in the South Bronx, New York. Our baseline study period was from May 2018 to November 2018 and our intervention period was December 2018 to 2019. This practice was established in 1967 as one of the first community health centers in the neighborhood, located in congressional district 15, the poorest in the nation.¹¹ The median income is less than half that of New York State and that of the country.¹² Adverse socioeconomic, environmental, and neighborhood factors, due to historical and systematic discriminatory policies, greatly impact the health of Bronx residents, contributing to its consistent ranking as last in health outcomes out of the 62 counties in New York State. The Bronx has a 39% child poverty rate, high rates of food insecurity, housing insecurity, and the lowest high school graduation rate in the state.¹³ Its residents experience the highest rates of preterm births, childhood obesity, asthma, and teen births in New York City.¹⁴

The practice offers pediatrics, internal medicine, mental health care, dermatology, and dentistry. There were roughly 23 000 pediatric patient visits in 2019. Clinicians included 9 attending pediatricians, 12 pediatric residents, and 1 pediatric chief resident. Integral members of the pediatric care team included CHWs, social workers, pediatric psychologists and a child psychiatrist, as well as nurses and front desk staff. The health center's administrative and medical directors played crucial roles in project implementation and leadership.

Development of the Warm Handoff Program

The Community Linkage to Care (CLC) program is a social needs screening and referral pilot developed in 2017 within the context of a health system-wide initiative in collaboration with community partners. Its objective was to systematize social needs screening and community resource navigation using CHWs.¹⁵ A grant from the Delivery System Reform Incentive Payment provided funding for 2 CHWs and a social worker. A 10-question social needs screening questionnaire adapted from the Health Leads screener was used to assess for food insecurity, housing/utility insecurity, transportation, child care, legal, and healthcare needs, as well as for social stressors.¹⁶ The screen was self-conducted most often by a parent or guardian prior to the medical exam at new patient visits and annual well child visits from birth through age 21, and the answers were entered into the electronic health record (EHR) by nursing during patient prep. For positive results for which families requested assistance, providers placed CHW referrals in the EHR and outreach was conducted by the CHW either telephonically or in-person. Warm handoffs were conducted if the CHW was available at the time of the visit.

While the CLC program had shown progressive improvements in screening rates and CHW referrals, our baseline warm handoff rates from May 2018 to November 2018 remained low, around 11%, leading to missed opportunities for referral of patients.¹⁵ The Model for Improvement was the QI framework we used to increase CHW warm handoffs.¹⁷

Rationale for our intervention was partially modeled after our health system's Behavioral Health Integration Program (BHIP) which has demonstrated effectiveness.¹⁸ An important component of BHIP is co-location including mental health consultations and services through warm handoffs between behavioral health providers and patients. While the initial CLC workflow called for the pediatric provider to attempt a warm handoff with the CHW, there was no shared workspace: the CHWs were seated on a different level of the building and they were inconsistently available on demand, which led to few warm handoffs. A process map made these delays, inefficiencies, and defects in the system apparent. It was hypothesized that key drivers of warm handoffs with the CHW included ease of access to and availability of CHWs and enhanced communication between team members (Figure 1).

Through ongoing monthly meetings with the key stakeholders we conducted several Plan, Do, Study, Act (PDSA) cycles, a key quality improvement model used for rapid change testing and process improvement. These included: facilitating easier access to the CHW by having them physically present in the pediatric clinic; providing frequent physical and verbal reminders; and data feedback. The administrative, clinical, and nursing leadership oversaw

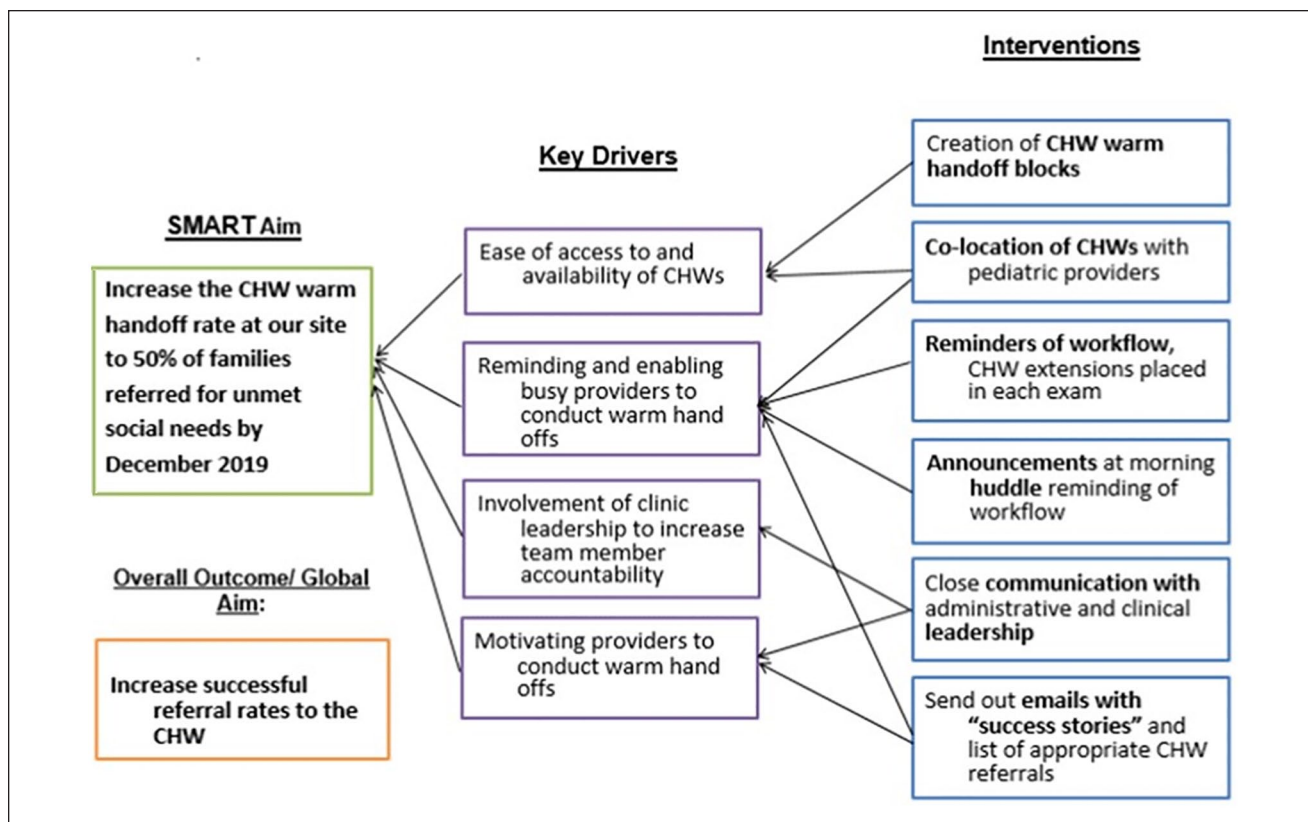


Figure 1. Key driver diagram.

implementation of the program and contributed to performance improvement initiatives that were led by the clinical champion.

Measures and Data Analysis

Social needs screening results were input into EHR in real time by nursing. A monthly report was also distributed by the health system’s information technology team. Patient referral information was entered into REDCap by the CHW for each patient encounter and was updated over time. Our outcome measure was the CHW warm handoff rate per month, defined as the number of warm handoffs conducted with the CHW over total CHW referrals. Warm handoff data were obtained from REDCap and rates were calculated based on numbers of CHW referrals placed each month. Our process measures were: number of social needs screens conducted and number of CHW referrals placed. Run charts were constructed for outcome and process measures and annotated for the outcome measure. Medians were calculated for the baseline period. The median was shifted after the start of the intervention period, as the intervention median remained higher than the baseline median for a run of 8 or more months and thus special cause variation occurred.¹⁹ CHW referrals and warm handoff rates between

the baseline and intervention period were compared using chi-square test for proportions. In addition, our balancing measure was the Ages & Stages Questionnaire Third Edition (ASQ-3) screening rate at the 12-month well-baby visit.

Results

Performance Improvement Activities

For the first 9 months of 2019, monthly meetings involving physicians, clinic leadership, nursing, CHWs, social workers and front desk staff were used to discuss program metrics including social needs screening rates, CHW referrals, and warm handoff rates, as well as workflows and improvement ideas. These meetings were subsequently replaced with smaller meetings with key stakeholders including the CLC clinical champion, CLC director, social pediatrics residency program director, and CHW representatives. We theorized key drivers and associated interventions to improve warm handoff rates. Key drivers included easier access to and availability of the CHW to receive warm handoffs, reminding and enabling providers to conduct warm handoffs, involvement of clinical leadership to increase team member accountability, and motivating providers to conduct warm handoffs (Figure 1).

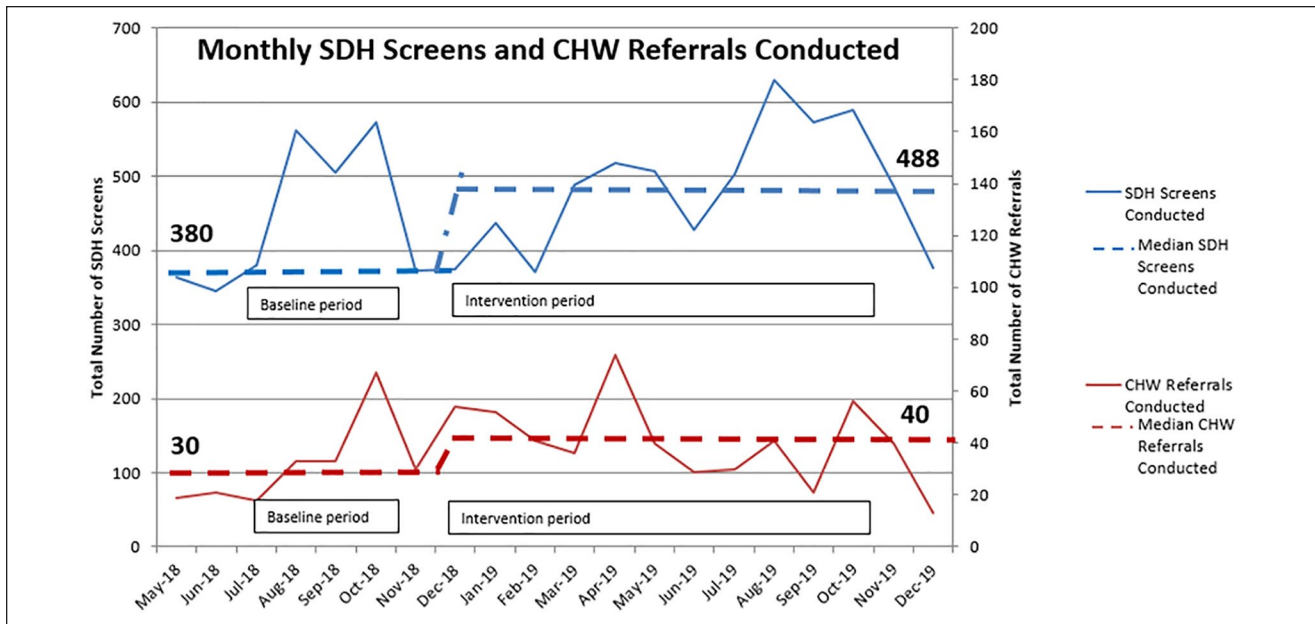


Figure 2. Monthly SDH screens and CHW referrals conducted.

Plan, Do, Study, Act (PDSA) cycles were performed and included the following interventions: dedicating CHW space near providers along with the creation of electronic CHW schedules and warm handoff blocks; improving communication with providers using email and huddle reminders and posting informative signs in exam rooms (Figure 3). Our intervention period began in January 2019, when warm handoff blocks were created in the EMR and in the CHW's schedule, and the CHW started working from a shared workspace with the pediatricians 3 mornings per week. EHR schedules were created for both CHWs, ensuring morning and afternoon warm handoff coverage during which time they were co-located with pediatrics. Monthly update emails were sent to the entire clinic staff and included program data, workflow reminders, and success stories of patients who were referred to a community resource, as well as ongoing program initiatives. Workflow reminders were placed in exam rooms with the CHWs' schedules and warm handoff hours to prompt and enable providers to conduct warm handoffs. Regular announcements were made at morning huddle to remind the team of the workflow and daily updates (Figure 3). Participation from the administrative and clinical directors, as well as nursing leadership, was crucial in holding team members accountable for following the new social needs screening and referral workflow.

Quantitative Analyses

A total of 3100 patients were screened for social needs in the baseline period and 6278 patients were screened in the

intervention period. For our process measures, the monthly median social needs screenings completed increased from 380 to 488 and the monthly median CHW referrals increased from 30 to 40 in the intervention period (Figure 2). Our outcome measure, the CHW warm handoff rate, increased two-fold from a monthly median of 11% to 24% in the intervention period (Figure 3). We also analyzed our results by intervention period. Of the all patients screened in the intervention period, 527 (8.4%) were referred to a CHW. This was significantly higher than the referral rate in the baseline period (7.1%, $P=0.03$). Of all referrals made in the intervention period, 116 (22%) had a warm hand off. This was also significantly higher than the warm hand off rate in the baseline period (8.6%, $P < 0.001$).

Our balancing measure, the Ages and Stages Questionnaire Third Edition (ASQ-3) screening rate at the 12-month well-baby visit showed an increase from a baseline median rate (from the last 2 months of 2018) of 83% to 92% in the intervention period.

Discussion

The rate of warm handoffs between families requesting assistance with unmet social needs and CHWs more than doubled over the intervention period, and the difference in the warm handoff percentage compared to baseline was found to be significant. There was also a statistically significant difference between the percentage of patients screened who were referred to the CHW after our interventions compared to a baseline. These data are important as they suggest that a QI approach aimed at optimizing the social needs

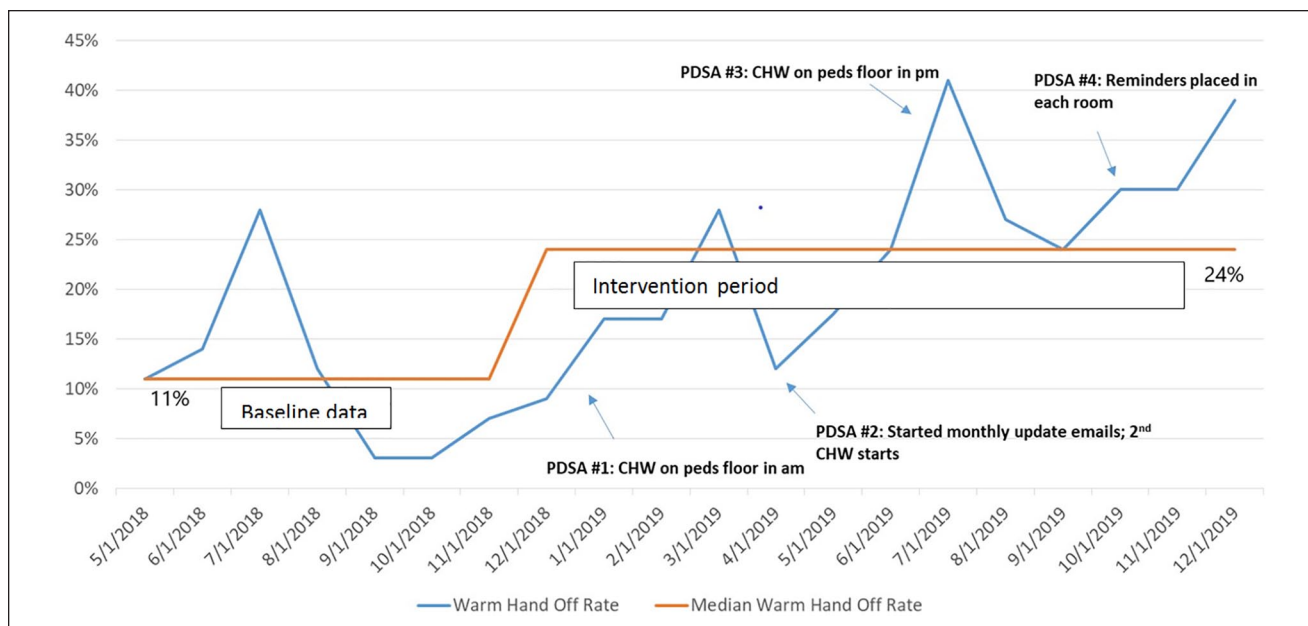


Figure 3. Monthly warm hand off rate May 2018 to December 2019.

workflow, workspace, and communication in a general pediatrics practice can influence performance.

Our data illustrate that improvement in the warm handoff rate, though modest, was attained after multiple PDSA cycles were instituted. The creation of dedicated warm handoff blocks in the CHWs' schedules helped formalize and systematize warm handoffs. This fostered the integration of CHWs into the pediatric workspace and everyday patient-care workflow; they were more available for warm handoffs and visible to the pediatricians and this likely made warm handoffs easier for busy providers. The improved communication and coordination of patient care may've contributed to a greater sense of teamwork and staff satisfaction as well.

Starting April 2019 there is a steady increase in the warm handoff rate illustrated by the 5 data points that are all above the median from July 2019 to December 2019. The astronomical data point from the baseline data for July 2018 may represent the addition of new resident team members and renewed interest in the program's workflow. The rates of social needs screens conducted increased likely due to a change in December 2018 when the screens went from being handed out in the examination rooms by nurses to being handed out by the front desk staff, and were included in a well-child packet of forms and screens.

Also important was increasing the motivation of providers and CHWs to perform warm handoffs and enabling providers to do so. Leadership buy-in to the workflow changes was crucial in holding providers and staff accountable for project participation. Monthly CLC emails kept providers and staff updated on the screening and referrals workflow

and improvement initiatives. Sharing success stories of patients who connected with a referral resource and saw improvements in their social needs may have positively reinforced referral behavior.

It is worth noting that this study took place at a single site, an academic-affiliated FQHC where providers and residents are accustomed to partaking in QI and research projects. The residents are part of a subcategory of pediatric residents in their program who receive teaching on social medicine which may skew their interest toward addressing social needs more so than in other settings. Furthermore, this was a project nested within a pilot program where much of the social needs screening and referral processes had been previously developed and iteratively adapted.¹⁵ CHWs were affiliated with a community-based organization and federally funded health center, Bronx Community Health Network (BCHN). BCHN which has been well-rooted in the Bronx community recruits, trains, assigns, and supervises the CHWs. The addition of a second CHW in April 2019, due to additional availability of grant funding, provided a crucial balance between CHW supply and demand that likely positively impacted our results. These contextual details may affect the generalizability of this study to other practices. However, grant funded CHWs may not be necessary to replicate our model. Individuals trained in social services, particularly in community based organizations and resource navigation, such as social workers or patient navigators, may fill the role of the CHW. A crucial component of our performance improvement project was workflow enhancement which can be studied and implemented regardless of specific support person present. Practices with

social service support may improve their warm handoff rates by making similar workflow changes such as co-locating services with medical providers, creating scheduled warm handoff blocks, and improving leadership involvement and communication with providers

Despite interventions to increase the CHW warm handoff rate they were still conducted on average at only roughly 25% of visits between families who were referred suggesting that more research needs to be conducted. Barriers in conducting warm handoffs still exist and should consider real world experiences and challenges in providing patient care in non-research settings. Qualitative investigations would shed light on contextual factors that influence program implementation. Although we didn't reach our aim to connect 50% of those referred for unmet social needs to the CHW through warm handoffs, our data show that with small continuous changes to the workflow, improvements, though modest, were made. This should encourage more PDSA cycles to be performed.

Furthermore, there are questions related to ideal CHW warm handoffs such as where, when, and by whom patients should be referred. Program workflow changes could consider referring patients to the CHW prior to being seen by the physician, by either a nurse or front desk staff member. Moving the CHWs further upstream in the workflow has been proposed in order to increase the percentage of patients meeting with a CHW in real time. Lastly, further investigation is needed to determine if being referred to the CHW by a warm handoff impacts whether patients are more likely to receive social services.

As in-person navigation leads to improvement in unmet social needs and family-reported child health, warm handoffs may be a key factor in assuring that the social needs of families are effectively addressed.⁸ While our results are limited, they illustrate that QI methods can be used to optimize workflows to increase warm handoffs with CHWs. This is especially important as health centers look to expand social needs screening and referral programs.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Dana Sanderson  <https://orcid.org/0000-0002-8643-2298>

Kevin Fiori  <https://orcid.org/0000-0003-1370-7366>

Supplemental Material

Supplemental material for this article is available online.

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