

Community Health Workers as an Extension of Care Coordination in Primary Care A Community-Based Cosupervisory Model

**Jean M. Gunderson, DNP; Mark L. Wieland, MD, MPH;
Onelis Quirindongo-Cedeno, MD; Gladys B. Asiedu, PhD;
Jennifer L. Ridgeway, PhD; Michael W. O'Brien, MSW;
Tara M. Nelson, CHW; Ron Buzard, MDiv;
Chad Campbell, MPA; Jane W. Njeru, MB, ChB**

Abstract: Community health workers (CHWs) bring their unique capacity as liaisons for patients, communities, and health care systems to health care teams. We describe the collaborative development of a community-based CHW program to address the social determinants of health that affect patients. This cosupervisory, generalist CHW model provides an innovative template for cocreation of patient-centered infrastructure and resourcing within an evolving and replicable holistic care continuum across patient ages, diagnoses, health care payers, and communities to promote health equity. The program has been effective in decreasing health care utilization and cost.

Key words: care coordination, community health workers, cosupervision, generalist model

Author Affiliations: Division of Primary Care Internal Medicine (Ms Gunderson and Drs Wieland, Quirindongo-Cedeno and Njeru), Robert D. and Patricia E. Kern Center for Science of Health Care Delivery (Drs Asiedu and Ridgeway), and Internal Medicine Administrative Services (Mr O'Brien and Ms Nelson), Mayo Clinic, Rochester, Minnesota; Intercultural Mutual Assistance Association, Rochester, Minnesota (Ms Nelson and Mr Buzard); and United Way of Olmsted County, Rochester, Minnesota (Mr Campbell).

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Correspondence: Jane W. Njeru, MB, ChB, Division of Primary Care Internal Medicine, Mayo Clinic, 200 First St SW, Rochester, MN 55905 (njeru.jane@mayo.edu).

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THE ever-changing contexts of health care access and care, the human experience, socioeconomic conditions, and community health have an evolving integrative progression and repatterning of the primary care workforce, practice, and infrastructure. The 1960s emphasized primary care and the rights of underserved persons to have equitable access to health care.

The implementation of a community-oriented primary care model developed by Kark and Kark (Wright, 1993) was translated from their work in Africa and Jerusalem in the 1940s and deployed in the United States (Kark, 1981; Longlett et al., 2001). This model created a visionary continuum of community-based preventive and primary care services that aligned epidemiology, medical science, social and behavioral sciences, and medical administration. Community assessments, prevention-oriented health care plans, clinical

outcome measures, and outreach for health promotion activities were integral components of the care, as were multidisciplinary teams that integrated indigenous health care workers engaged in partnership with patients (Connor et al., 1983; Wright, 1993).

In the 1960s, community and migrant health centers were created to respond to the growing needs of the US immigrant and underserved populations (Longlett et al., 2001). Community health workers (CHWs) became an integral part of these centers.

The literature discussing CHWs and their numerous permutations is diverse; more than 650 titles have been reported describing a variety of community aides working in different health settings as CHWs (Lehmann & Sanders, 2007). Generalizations about the profile and their role can be difficult because they are diverse throughout their history, within and across health programs. More commonly, they are known as *promotoras* and *promotores de salud* and as lay health workers, community health aides, navigators, and community health representatives. Their role within community and primary care settings grew organically to support complex medical and nonmedical care needs beyond clinic walls and into patients' homes and communities (Brownstein et al., 2011).

The 2007 Health and Human Services Research Administration report on the Community Health Worker National Workforce Study exemplifies the contributions of CHW practice in the United States (Lehmann & Sanders, 2007). According to the workforce study, CHWs bridge language, literacy, and cultural meanings for people and communities while promoting health education, care coordination activities, linkages to resources, and patient-family self-efficacy. They serve as liaisons between communities and systems of care. For some patients, a CHW carries out various wide-ranging assignments in prevention and curative care, and in other circumstances, they assist with highly specific interventions. However, the primary areas of CHW practice have been in preventive services and the care of chronic conditions. Their core programming supports specific health needs,

including maternal and child health, mental health, nutrition, diabetes, cancer, asthma, and cardiovascular disease. The CHW program's patient-centered impacts involve meeting basic human needs, often of underserved and underrepresented persons, within lived conditions across cultures and communities (Brownstein et al., 2011).

In this article, we describe the development of a CHW program that incorporates 2 community-based organizations and a large academic medical center. The unique case demonstrates a collaborative partnership and organizational structure, with an innovative care delivery model, to efficiently address some social determinants of health that impact patients' health in response to the needs of patients, families, and the health care system. This community-based, cosupervisory, generalist CHW model provides an innovative template for the cocreation of patient-centered infrastructure and resourcing within an evolving and replicable holistic care continuum across ages, diagnoses, payers, and communities promoting health equity. We also report preliminary data on program enrollment and outcomes.

PROGRAM INITIATION AND INTEGRATION IN PRIMARY CARE PRACTICE

Context and need for a community-clinic partnership

Mayo Clinic Employee and Community Health (ECH) is a primary care practice operating within a large multispecialty health care center in the Midwest United States. It primarily is charged with caring for employees, their families, and the local community. ECH is a certified health care home that incorporates patient-centered transdisciplinary teams, integrated electronic health records, chronic disease and preventive service registries, and integrated specialists. More than 200 providers serve more than 150 000 patients in 5 outpatient clinic sites. Using practice-based metrics, we found that the subgroup of patients with complex medical and social needs

in this clinic were at high risk for poor health outcomes and suboptimal health care utilization (Njeru et al., 2015; Wieland et al., 2012). Health care teams, even with robust care coordination programs, had limited reach and ability to modify most of the social determinants of health affecting their patients—a circumstance not unique to this clinic but identified in earlier reports (McElmurry et al., 2003; Page-Reeves et al., 2016). The clinical team at Mayo Clinic ECH sought to develop a CHW program based on the Racial and Ethnic Approaches to Community Health model described by Cosgrove and colleagues (Cosgrove et al., 2014) and described in extensive literature on CHW effectiveness (Arsenault et al., 2016; Balcazar et al., 2011; Gimpel et al., 2010; Herman, 2011; Quinones et al., 2015).

In 2012, the ECH team approached 2 community organizations, the Intercultural Mutual Assistance Association (IMAA) and the United Way of Olmsted County, Minnesota. The IMAA is a local 501(c)(3) nonprofit organization, founded in 1984 to respond to needs of refugees and immigrants resettling in the area. The organization's programming covers 4 areas: employment, victim services, language, and CHW. These services align with a mission of building bridges between cultures. Similarly, the United Way of Olmsted County identifies health as a building block to quality of life and unites people and resources to promote access to basic health care, behavioral health, preventive dental care, and health insurance.

A working group developed the framework and operational structure of the new CHW program. The partners had enthusiastic support for the program, largely driven by a hypothesis that aligning community-based CHWs with care teams, home visits, community resources, and public health and human services infrastructure would effectively help patients improve their health.

In late 2012, the first CHW internship was codeveloped with the primary care teams and the IMAA, identifying clinical leads, program targets, patient cohorts, documentation and training needs, and operational workflows. From 2013 through 2014, the internship be-

came a pilot, working closely with the United Way, the IMAA, and ECH leaders to initially support adult and pediatric care coordination and to later expand to early and periodic screening, diagnosis, and treatment services. Services included preventive care for children (from birth through age 20 years) who are enrolled in Medicaid. The services also involved care coordination with integrated behavioral health programming and assistance for adults who have complex medical needs and are leaving a hospital or skilled nursing facility, as well as elders who are homebound with late-stage life-limiting illness. Programming phased in during 2015 included referrals from social work areas for children and adults who did not meet other program eligibility criteria but were identified as in need of additional support.

IMPLEMENTATION: BUILDING A DISTINCTIVE CHW MODEL

The overall goal of CHW programs is to improve health outcomes for patients with complex medical needs and high-risk social determinants of health. The present CHW program is defined by particular characteristics that have contributed directly to its success: a community-based cosupervisory structure, a generalist model, and an extension of clinical care coordination infrastructure into patients' homes.

Community-based cosupervisory model

Although contracts with community nonprofit organizations are common, an aspect of this program is the cosupervision of CHWs by both the clinic and community groups. The supervisory model is operated by the IMAA CHW program manager and a designated clinical lead person in ECH. The CHW team and the CHW cosupervisors hold monthly or bi-monthly *buddles* with the designated clinical leads at each clinic site for consultation, relational care, troubleshooting, and updates on operations, tools, and community resources. The supervisors are supported by an ECH CHW physician lead and administrator and the IMAA executive director. A patient's clinical

lead provides direct clinical supervision, supported by the ECH cosupervisor; the IMAA cosupervisor provides administrative supervision. The CHW team, the IMAA leads, and the clinical teams have an open-door policy in which the ECH cosupervisor provides orientation to new team members and consults as needed to support and mentor.

The cosupervision has tangible strengths, including assimilation of comprehensive specialized cross-training for CHWs, smoother operational workflows iteratively informed by the needs of the clinic or the community organization, and seamless communication with quick information turnaround.

Generalist model

Many programs involve the CHWs to address specific health issues. The CHWs in the present program take on a generalist role, performing a wide range of tasks—a typology that is often difficult. The CHWs serve multiple roles. These include helping patients navigate the health care system and being a liaison for health care appointments and communication, directing patients to services and helping them access community resources, and advocating for community needs. They serve as health educators, provide and reinforce basic health education on disease prevention and management of chronic disease, and gather patient self-reported health data for the clinical care team. In addition, CHWs are trained to work across the demographic and clinical spectrums in teams. A language interpreter joins the team where necessary. Specialized training is ongoing throughout CHW programming and integrates new CHWs accompanying experienced ones for home visits.

The patients who are potentially served by the program (ie, patients enrolled to the primary care practices) are diverse in race, ethnicity, and languages spoken. Therefore, a CHW pool cannot culturally or linguistically represent each of these patient populations. However, if CHW-patient language concordance is lacking, CHWs still frequently share similar life experiences influenced by socioeconomic challenges in the same community, thereby building the foundation of empathic

relationships. Furthermore, the CHWs are employed by a nonprofit organization that exclusively serves immigrants and refugees and that provides an important set of values from which to base CHW-patient interactions. This heterogeneity of patient populations is a common feature of large primary care practices.

CHW candidates are drawn from the local community through community-placed advertisements and follow the Minnesota Community Health Worker Curriculum. Its 14 credits and 72 to 80 hours of supervised internship are offered through the Minnesota State Colleges and Universities system. The internship is aligned operationally at Mayo Clinic and the IMAA to promote bidirectional team orientation and care, CHW role development in transdisciplinary practice, patient education, resourcing, and navigation supports in primary care and a community-based infrastructure.

Extension of clinical care coordination infrastructure

The CHW team provides a new lens of complex social situations, living conditions, and patient resiliency, especially when the team is embedded in the communities, and is enhanced by the capacity to visit patients in their homes (McCollum et al., 2016). By comparison, most clinical teams remain located in the clinic, a situation that makes it challenging to understand the extent and effects of social determinants of health on their patients' health trajectories. Furthermore, the ability of clinical teams to address social determinants of health is considerably limited in capacity and reach. CHWs serve as an extension of the clinical care coordination infrastructure. They report directly to a designated clinical lead of the patient's care team. Depending on what clinical care management program the patient is enrolled in, the clinical lead may be a social worker, a nurse care coordinator, or a care team nurse.

Incorporating a CHW order by proxy, the clinical lead places the CHW referral with targeted goals and baseline information needed for the patient visit. The CHWs in the IMAA offices receive the referral form, and the CHW program manager provides the

intake, reviewing the referrals and contacting the clinical lead for preplanning purposes, and notification when the CHW assignment is completed. The assigned CHW reports back to the clinical lead after every patient contact. A CHW reporting tool is also completed at each visit and faxed to the clinical team, where it is scanned into the patient’s electronic health record for review by the clinical team. The clinical lead also documents the visit in the electronic health record. This bidirectional reporting process upholds practice boundaries in transdisciplinary teams, with real-time reporting and communication inside and outside the clinic walls.

The comprehensive patient-centered care continuum develops across primary care and community-based infrastructure, with CHWs serving as the eyes and ears of the clinical teams in the community. Home visits are a crucial component of the program, although a few visits are at the primary care site or a community-based site on the basis of patient preferences. The CHWs are trained to provide both “warm handoffs” (face to face or telephone introduction of the CHW to the patient by the clinical lead) and “cold calls” (the CHW contacts the patient directly without a prior introduction) to meet patient and team preferences. Nonvisit care coordination assistance, primarily through telephonic support, is provided for resourcing and care between visits. Social determinants of health data are identified in partnership with the patients. CHWs are seen as guardians of patient narratives, observers of the margins, and champions of patient resiliency and self-management within the home and relational care.

REACH AND OUTCOMES

Clinical administration prioritizes program metrics to monitor the CHW program’s effectiveness, including its reach, effect on inpatient health care utilization (ie, emergency department visits and hospitalizations), and total cost of care among patients with concomitant medical and social complexity. The program leadership is also using qualitative inquiry to better understand how the program is operat-

ing in practice and how patients, CHWs, and clinical providers perceive its effectiveness. (The results of these analyses will be reported in the future.)

Program reach and scope

We reviewed the number and demographic and clinical characteristics of patients served by the program since its inception and the CHW visit components (eg, number and length of visits and time spent on care following the visit). Table 1 outlines the demographic characteristics of the 735 patients served by the 4 CHWs during a 4-year period when the program was up and running (June 2013 through June 2017) and the visit characteristics.

We observed that the scope of CHW services and the reasons for patient referral to the CHW differed widely. Often, several issues were addressed during a single CHW visit. We reviewed the indications for the referral of 203 patients to the CHWs. Patients were grouped into 4 categories: health insurance navigation (eg, insurance application and understanding of insurance coverage); health system navigation (eg, making and keeping clinic appointments and finding providers); non-health system navigation (eg, housing, transportation, and food subsidies); and health education and promotion (eg,

Table 1. Demographic and CHW Visit Characteristics of 735 Patients Served by the CHW Program

Characteristics	Value
Age, mean (SD), y	45.1 (28.2)
Female sex, n (%)	425 (47.8)
CHW visit, mean (SD)	
Number of visits	4.2 (5.9)
Time, h	8.6 (13.3)
Nonvisit care time, mean (SD), h	2.4 (3.5)
CHW program participation, mean (SD), d	196.1 (188.5)

Abbreviations: CHW, community health worker; SD, standard deviation.

diabetes education and avoidance of asthma triggers). Most referrals were for health insurance and non-health system navigation.

Program effect on health care utilization and cost

In addition, we evaluated a 6-month period that encompasses time before and after CHW engagement. We analyzed health care utilization (number of emergency department visits, inpatient hospitalizations, and outpatient visits) and total cost of care for a patient subgroup. For the correlated outcomes and generalized estimating equations, we used Poisson regression to assess differences in the before and after utilization rates and the sign test to assess median differences between the before and after costs. Through these tests, we found a significant decrease in outpatient visits ($P < .01$) and emergency department utilization ($P = .01$) among adults, with decreases among patients with more medically complex needs particularly (Table 2). We observed similar effectiveness on the cost of care (data not shown).

DISCUSSION

In this report, we describe CHW program development and implementation and the distinctive characteristics of a community-based plan embedded in a large primary care practice. Community and clinic cosupervision of the CHW program facilitated the flow of information, training, and communication. By comparison, the generalist model prepared each CHW to competently address the needs of patients across the demographic and clinical spectrum and ensured optimization of resource use. Finally, embedding the CHW program within existing clinical infrastructure (eg, care coordination) allows for efficient extensions of those programs within a patient-centered medical home.

By addressing social needs, the program showed potential reductions of health care utilization and cost of care among patients with concomitant medical and social complexity. This community-based cosupervised generalist model served as an extension of the

Table 2. Utilization Rates of Outpatient, Inpatient, and Emergency Department Facilities of CHW Visits for Program Participants Generally and With High Medical Complexity

Facility Use	Utilization Rate							
	All Participants (n = 345)			Participants With High Medical Complexity ^a (n = 176)				
	Pre-CHW Visit, Mean	Post-CHW Visit, Mean	IRR (95% CI)	P Value	Pre-CHW Visit, Mean	Post-CHW Visit, Mean	IRR (95% CI)	P Value
Outpatient visit	7.09	6.10	0.86 (0.78-0.95)	<.01	9.16	7.45	0.81 (0.72-0.92)	<.01
Inpatient admission	0.66	0.54	0.82 (0.66-1.04)	.09	1.02	0.79	0.77 (0.59-1.02)	.07
Emergency department visit	1.48	1.12	0.76 (0.63-0.93)	.01	1.99	1.50	0.75 (0.59-0.96)	.02

Abbreviations: CHW, community health worker; CI, confidence interval; IRR, incidence rate ratio.

^aMedical complexity defined with the Charlson Comorbidity Index (used in longitudinal studies to estimate mortality risk on the basis of comorbid conditions).

clinical care coordination infrastructure into a patient's home and exemplifies features previously identified as having potential influence in health outcomes (McCollum et al., 2016).

The CHW program has iteratively adapted over the 4 years with stakeholder input and shifting contextual landscapes. For example, CHW services were extended beyond patients enrolled in care coordination programs to include patients identified by social workers as having persistent unmet social needs. This extension resulted in a large influx of referrals that quickly exceeded program capacity, necessitating a temporary pause on new referrals. In response, and with evidence of improved utilization and cost savings, the clinical practice leaders supported the hiring of additional CHWs.

Program challenges continue to be similar to those that commonly impact CHW programs across the United States. These include time-limited funding streams, increased CHW turnover and burnout risk, and limited capacity for increasing patient demand.

CONCLUSION

This generalist CHW model, implemented and disseminated with multiple iterations, has been effective in decreasing health care utilization and cost. It provides a template that can be adapted by clinical practices. The distinctive structure, beginning with the collaborative development, of this community-based, cosupervisory, and generalist model seamlessly serves as an extension of clinical care coordination, with improved outcomes. This model might be replicable elsewhere; however, it is important to acknowledge the unique factors associated with the CHW program described. Much of the program's success can be attributed to building an interdisciplinary relationship among the stakeholders within the health care team and the community organizations. The program was supported by Mayo Clinic ECH and depended on the cosupervisors, who have in-depth knowledge about the sociocultural context of the population they serve.

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